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PUBLIC HEALTH REPORTS

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THE SELECTION OF A HEAT-RESISTANT STRAIN OF VACCINE VIRUS (RABBIT TESTICULAR)*

By CHARLES ARMSTRONG, *Surgeon, United States Public Health Service*

Among the various factors known to exert a deleterious influence upon the keeping qualities of commercial vaccine virus (in vitro) the factor most commonly encountered and important is exposure to room or body temperatures. The present paper deals with an attempt, begun in 1926, to develop a heat-resistant strain by exposing vaccine to a temperature of 37.5° C.[1] and then propagating the strain from the surviving virus. This process of selection was repeated with successive transfers.[2]

PROCEDURE

Virus.—The virus selected for beginning this work was a commercial calf virus of high potency and low bacterial content, which we shall designate as 28628. The first transfer was made with the supernatant fluid secured by centrifuging a one-twentieth suspension of the vaccine in distilled water at high speed.

Vaccinifer.—The rabbit, being susceptible to vaccinia, seemed to be the laboratory animal of choice for propagating the strain. Testicular culture of the virus, following Henseval and Convent (1), seemed to offer advantages over skin culture, since the testicle is less exposed to environmental changes. Moreover, testicular virus can be secured practically sterile,[3] which largely eliminates the possible influence that variations in the kind and number of contaminating organisms might have on the ability of the virus to withstand exposure to 37.5° C. Also, the ease of inoculating and of harvesting testicular virus gives this gland a definite advantage over the brain

*From the Hygienic Laboratory, United States Public Health Service.

[1] This temperature (37.5° C.) was selected because it is that encountered by virus when implanted in man and it would seem to represent the highest degree of heat likely to be encountered by vaccine through abuse in handling.

[2] C. A. Magoon (J. Inf. Dis. (1926), 38:429-439), working with *B. mycoides*, increased the resistance of its spores to an exposure of 100° C. some twenty-five-fold by a similar process of selection and propagation.

[3] Cultural work showed that a few bacteria were usually to be found in our testicular virus provided sufficiently large samples were cultured.

as the site for culturing the strain. In addition, the former tolerates the inoculation of much larger doses of virus than will the latter. The virus has, to date, been passed through 54 rabbits, 6 monkeys, and 1 calf (see Table 1). The occasional employment of a vaccinifer of different species was deemed advisable for two reasons:

1. There is a widespread belief that vaccine virus tends to lose potency when propagated continuously on a single species.

2. Through occasional passage on the monkey or calf, it would seem that the strain was, in a measure, safeguarded against contamination with spontaneous rabbit virus or bacterial diseases, especially when the virus for the following rabbit transfer was recovered from the blood stream as described by Ohtawara (2).

Method of inoculation.—The rabbits were inoculated under ether anesthesia, from 1 to 1.5 c. c. of a 1:5 to 1:10 dilution of the previously incubated virus being usually injected into each testicle and the gland lightly massaged. The inoculating dose of virus, it will be noted, was large; but it must be remembered that the virus was weakened by previous heating, and it was felt that by using large quantities the probability of securing resistant variants would be increased. Where unheated virus was used for transfer, higher dilutions were employed.

Harvesting.—The testicles were removed under ether anesthesia and with sterile precautions, the animal being sacrificed and immediately autopsied. The virus was collected not on any definite day following inoculation but when the orchitis was judged to have reached its height, usually on the fourth to seventh day (Table 1).

Grinding of the testicles.—The grinding was carried out in a small, easily sterilized, hand-operated mill in which the testicles, freed of extraneous tissue, were forced through a perforated steel plate where they encountered a grinding burr. By maintaining a constant ratio between the turns on the pressure screw and the turns of the burr a uniform degree of fineness was secured.

Dilution of the virus for storage.—The ground material was received into a sterile amber-colored bottle, its weight was determined, and 3 c. c. of 33⅓ per cent glycerin in 0.85 per cent saline were added for each gram of tissue. This concentration was selected after preliminary testing had shown that it was about the lowest percentage of glycerin which would prevent bacterial multiplication at 37.5° C. The higher percentages of glycerin usually employed with dermovaccine were avoided, since testicular virus is practically sterile and since at 37.5° C. glycerin itself is deleterious to the virus.

TABLE 1.—*Details of transfer and heat selection of vaccine virus*

Numbers of transfers of strain (No. 28628) of commercial (calf) vaccinia virus through animals	Animal used for transfer	Route of inoculation	Date inoculated	Date transfer virus harvested	Number days testicular virus held at 37.5° C. before transfer	Potency of heated testicular virus tested on skin of rabbit No.—	Material used for transfer
1	Rabbit No. 21	Testicular	July 8, 1926	July 12, 1926	0		Testicle.
2	Rabbit No. 28	do	July 14, 1926	July 19, 1926	0		Do.
3	Rabbit No. 34	do	July 19, 1926	July 24, 1926	4 1/24	43	Do.
4	Rabbit No. 46	do	July 31, 1926	Aug. 5, 1926	7 2/24	52	Do.
5	Rabbits Nos. 53, 54	do	Aug. 16, 1926	Aug. 21, 1926	10 1/24	57	Do.
6	Rabbits Nos. 59, 60	do	Aug. 27, 1926	Sept. 1, 1926	2 5/24	63	Do.
7	Rabbits Nos. 66, 67	do	Sept. 7, 1926	Sept. 13, 1926	3 1/24	75	Do.
8	Monkey No. 1	Dermal	Sept. 23, 1926	Oct. 2, 1926			Citrated blood.
9	Rabbit No. 93	Testicular	Oct. 2, 1926	Oct. 7, 1926	3 15/24	97	Testicle.
10	Rabbits Nos. 123, 124	do	Oct. 22, 1926	Oct. 27, 1926	0		Do.
11	Rabbits Nos. 87, 88, 125	do	Nov. 8, 1926	Nov. 13, 1926	4	127	Do.
12	Rabbits Nos. 129, 130	do	Nov. 24, 1926	Nov. 30, 1926	0		Do.
13	Rabbit No. 133	do	Dec. 1, 1926	Dec. 6, 1926	4 22/24	141	Do.
14	Rabbit No. 145	do	Dec. 28, 1926	Jan. 4, 1927	0		Do.
15	Rabbit No. 157	do	Jan. 29, 1927	Feb. 3, 1927	0		Do.
16	Monkey No. 2	Dermal	Feb. 3, 1927	Feb. 9, 1927			Citrated blood.
17	Rabbit No. 159	Testicular	Feb. 9, 1927	Feb. 16, 1927	3	[1]	Testicle.
18	Rabbit No. 160	do	Feb. 19, 1927	Feb. 26, 1927	5 18/24	174	Do.
19	Rabbits Nos. 171, 173	do	Mar. 14, 1927	Mar. 19, 1927	6 17/24	[1]	Do.
20	Rabbits Nos. 185, 186	do	Mar. 26, 1927	Apr. 4, 1927	0		Do.
21	Rabbits Nos. 187, 188	do	Apr. 4, 1927	Apr. 8, 1927	7 1/24	199	Do.
22	Rabbit No. 198	do	Apr. 15, 1927	Apr. 18, 1927	0		Do.
23	Rabbit No. 200	do	Apr. 18, 1927	Apr. 23, 1927	8 17/24	202	Do.
24	Rabbits Nos. 204, 205	do	May 8, 1927	May 13, 1927	9 3/24	207	Do.
25	Rabbit No. 207	do	May 24, 1927	June 1, 1927	0		Do.
26	Rabbit No. 210	Dermal	June 1, 1927	June 6, 1927			Citrated blood.
27	Rabbits Nos. 214, 215	Testicular	June 6, 1927	June 13, 1927	10 1/24	218	Testicle.
28	Rabbits Nos. 216, 217	do	June 28, 1927	July 4, 1927	0	225	Do.
29	Monkey No. 3	Dermal	July 5, 1927	July 11, 1927			Citrated blood.
30	Rabbit No. 227	Testicular	July 11, 1927	July 16, 1927	12 3/24	[1]	Testicle.
31	Rabbits Nos. 235, 236	do	Aug. 4, 1927	Aug. 8, 1927	10	251	Do.
32	Rabbit No. 237	do	Aug. 25, 1927	Sept. 3, 1927	10	[1]	Do.
33	Rabbit No. 253	do	Sept. 17, 1927	Sept. 21, 1927	0		Do.
34	Monkey No. 4	Dermal	Sept. 22, 1927	Sept. 26, 1927			Citrated blood.
35	Rabbits No. 254, 255	Testicular	Sept. 26, 1927	Sept. 30, 1927	9 22/24		Testicle.
36	Rabbit No. 258	do	Oct. 14, 1927	Oct. 21, 1927	15 1/24	265	Do.
37	Rabbits Nos. 263, 264	do	Nov. 7, 1927	Nov. 12, 1927	5	[1]	Do.

[1] Transferred without test.

TABLE 1.—*Details of transfer and heat selection of vaccine virus*—Continued

Numbers of transfers of strain (No. 28628) of commercial (calf) vaccinia virus through animals	Animal used for transfer	Route of inoculation	Date inoculated	Date transfer virus harvested	Number days testicular virus held at 37.5° C. before transfer	Potency of heated testicular virus tested on skin of rabbit No.—	Material used for transfer
38	Rabbits Nos. 266, 267	Testicular	Nov. 17, 1927	Nov. 21, 1927	$15^{23}/_{24}$	273	Testicle.
39	Rabbit No. 274	do	Dec. 10, 1927	Dec. 16, 1927	0		Do.
40	Rabbit No. 276	do	Dec. 17, 1927	Dec. 22, 1927	0		Do.
41	Rabbits Nos. 279, 280, 281	do	Dec. 23, 1927	Dec. 27, 1927	18	307	Do.
42	Rabbit No. 302	do	Jan. 14, 1928	Jan. 19, 1928	0		Do.
43	Rabbits Nos. 346, 347	do	Jan. 25, 1928	Jan. 28, 1928			Do.
44	Monkey No. 5	Dermal	Feb. 14, 1928	Feb. 21, 1928			Citrated blood.
45	Rabbits Nos. 342, 343, 344	Testicular	Feb. 21, 1928	Feb. 27, 1928	0		Testicle.
46	Calf No. 1	Dermal					Skin virus.
47	Rabbit No. 379	do	Mar. 26, 1928	Mar. 30, 1928			Citrated blood.
48	Rabbits Nos. 380, 381, 382	Testicular	Mar. 30, 1928	Apr. 4, 1928	$22^{1}/_{24}$	411.5	Testicle.
49	Rabbits Nos. 422, 423, 424	do	May 4, 1928	May 9, 1928	$21^{15}/_{24}$		Do.
50	Rabbits Nos. 529, 529.5	do	June 30, 1928	July 5, 1928	0	450.5	Do.
51	Rabbit No. 539	do	July 6, 1928	July 9, 1928	0		Do.
52	Rabbit No. 567	Dermal	July 9, 1928	July 13, 1928			Citrated blood.
53	Rabbits Nos. 568, 569	Testicular	July 13, 1928	July 18, 1928	0		Testicle.
54	Monkey No. 6	Dermal	July 25, 1928	July 30, 1928			Skin virus.
55	Rabbit No. 577	do	July 31, 1928	Aug. 4, 1928			Citrated blood.
56	Rabbits Nos. 579.5, 579.25	Testicular	Aug. 4, 1928	Aug. 9, 1928	24	[1]	Testicle.
57	Rabbits Nos. 584, 585, 586	do	Sept. 15, 1928	Sept. 20, 1928	$25^{23}/_{24}$	619	Do.
58	Rabbits Nos. 636, 637	do	Oct. 27, 1928	Nov. 2, 1928	0		Do.
59	Rabbits Nos. 639, 640, 641	do	Nov. 9, 1928	Nov. 13, 1928	0		Do.
60	Rabbits Nos. 657, 658	do	Nov. 23, 1928	Nov. 27, 1928	31	681	Do.
61	Rabbits Nos. 682, 683	do	Dec. 31, 1928	Jan. 7, 1929	$33^{1}/_{24}$	755	Do.

[1] Transferred without test.

Heating the virus.—A portion, usually 15 c. c., of the batch of glycerinated virus intended for the succeeding transfer contained in a sterile, glass-stoppered, amber-colored bottle, was placed in the incubator at 37.5° C. After a preliminary period of incubation, the extent of which was determined from previous experience with the virus, samples (3 c. c.) were removed at intervals (Chart 1) and stored at −5° C. to −8° C. When the desired samples had all been removed, they were tested without dilution on the scarified skin of a rabbit and returned to cold storage. That sample which withstood the maximum period of incubation but which showed no detectable qualitative change in the character of the skin lesion was selected for transfer. It may be noted, however (Table 1), that testicular transfer was occasionally carried out with incubated virus in which the skin potency test was omitted. In other instances the virus was transferred without preliminary heating. The latter procedure was resorted to when it was felt that the skin lesions indicated that the heated virus was growing weak or was tending to give atypical pustules on the skin.

RESULTS

It is shown in Chart 1 that the length of time during which the virus can be kept at 37.5° C. and still maintain sufficient potency to give typical lesions on the skin of the rabbit increased several fold, the sixty-third transfer still retaining considerable potency for the rabbit's skin after 33 days and 3 hours at 37.5° C.

It is realized that there is some variation in the susceptibility of different rabbits to vaccinia; however, it seems that this factor can hardly be of significance in explaining the results herein noted, since the heat-resisting properties have increased consistently and seem to have reached a degree hardly to be explained by any chance variation in the susceptibility of the rabbits on which potency tests were carried out. It is not possible to state just what proportion of this increased resistance to temperature is due to the method of heat selection and how much to the method of transfer. In this connection a control series of similar transfers but without heat selection would be of interest.

Virulence of the virus.—At the beginning of the series of testicular transfers the virus did not seem to be markedly virulent for the testicle; but the local virulence increased with successsive transfers, a marked hemorrhagic type of orchitis becoming apparent from the tenth to sixteenth transfers. In later transfers, however, there has been no marked change observed in the gross appearance of the glands.

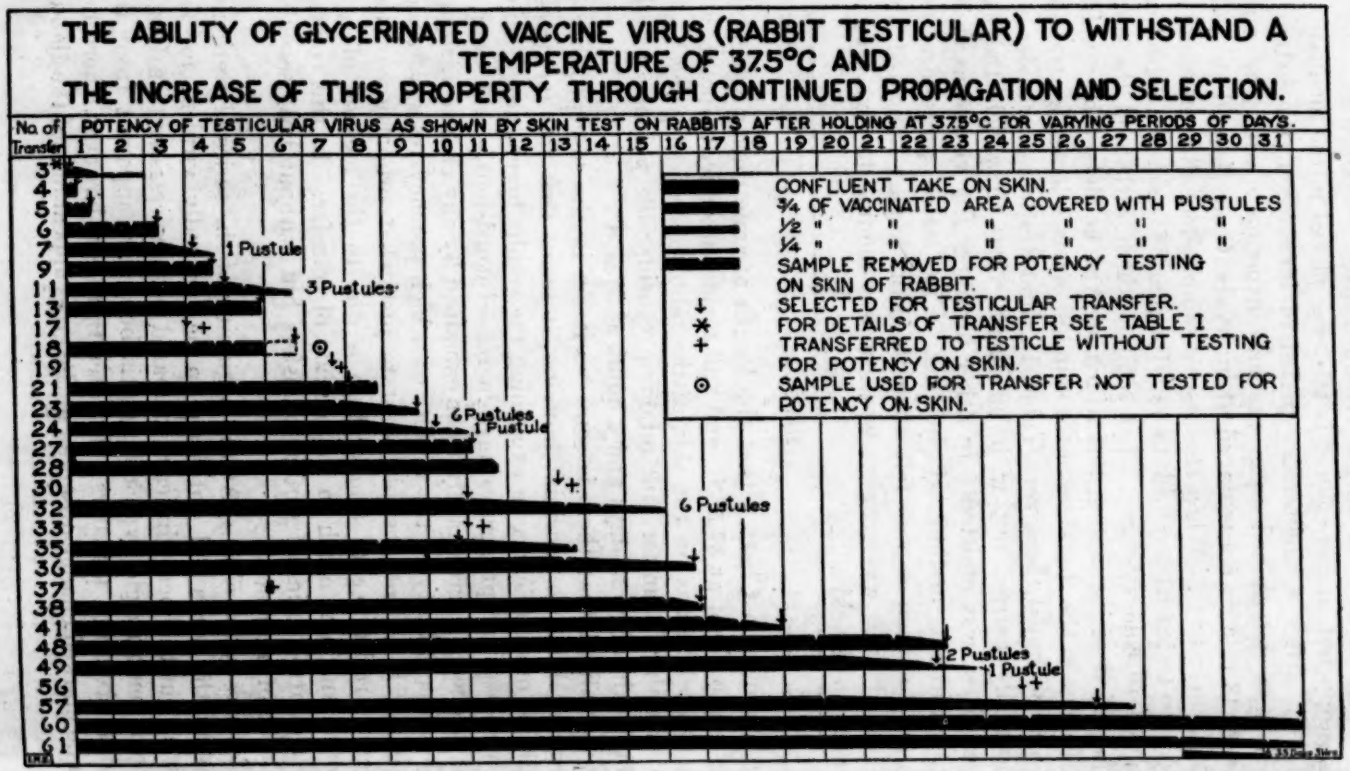
THE ABILITY OF GLYCERINATED VACCINE VIRUS (RABBIT TESTICULAR) TO WITHSTAND A TEMPERATURE OF 37.5°C AND THE INCREASE OF THIS PROPERTY THROUGH CONTINUED PROPAGATION AND SELECTION.
No. of Transfer
POTENCY OF TESTICULAR VIRUS AS SHOWN BY SKIN TEST ON RABBITS AFTER HOLDING AT 37.5°C FOR VARYING PERIODS OF DAYS.
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31
3* 4 5 6 7 9 11 13 17 18 19 21 23 24 27 28 30 32 33 35 36 37 38 41 48 49 56 57 60 61
1 Pustule
3 Pustules
6 Pustules
1 Pustule
6 Pustules
2 Pustules
1 Pustule
CONFLUENT TAKE ON SKIN.
¾ OF VACCINATED AREA COVERED WITH PUSTULES
½ " " " " " "
¼ " " " " " "
SAMPLE REMOVED FOR POTENCY TESTING ON SKIN OF RABBIT.
SELECTED FOR TESTICULAR TRANSFER.
* FOR DETAILS OF TRANSFER SEE TABLE 1
+ TRANSFERRED TO TESTICLE WITHOUT TESTING FOR POTENCY ON SKIN.
⊙ SAMPLE USED FOR TRANSFER NOT TESTED FOR POTENCY ON SKIN.

CHART 1

TABLE 2.—*Cross immunity tests between commercial and heat-selected strains of vaccinia virus on rabbits*

Rabbit No.	Preliminary vaccinations				Test for immunity			
	Virus	Date	Route	Dose of virus	Virus	Date	Route	Result
				C. c.				
677	11717. Commercial calf.	Dec. 18, 1928 Dec. 26, 1928 Jan. 5–29, 1928	Intracutaneous do do	0.1 .2 .2	28628. 58th and 59th transfer, pooled.	Jan. 8, 1929	Cutaneous	Immune reaction. Erythema and edema. Height, Jan. 10, 1929.
678	11717. Commercial calf.	Dec. 18, 1928 Dec. 26, 1928 Jan. 5, 1929	Intracutaneous do do	.1 .2 .2	28628. 58th and 59th transfer, pooled.	Jan. 8, 1929	Cutaneous	Immune reaction. Height, Jan. 10, 1929.
679	11717. Commercial calf.	Dec. 18, 1928 Dec. 26, 1928 Jan. 5, 1929	Intracutaneous do do	.1 .2 .2	28628. 58th and 59th transfer, pooled.	Jan. 8, 1929	Cutaneous	Immune reaction. Height, Jan. 10, 1929.
684	083453–A. Commercial calf.	Dec. 26, 1928 Jan. 5, 1929	Intracutaneous do	.1 .2	28628. 58th and 59th transfer, pooled.	Jan. 8, 1929	Cutaneous	Immune reaction. Height, Jan. 10, 1929.
685	083453–A. Commercial calf.	Dec. 26, 1928 Jan. 5, 1929	Intracutaneous do	.1 .2	28628. 58th and 59th transfer, pooled.	Jan. 8, 1929	Cutaneous	Immune reaction. Height, Jan. 10 to 11, 1929.
724	M083453–A. Commercial calf.	Dec. 26, 1928 Jan. 5, 1929	Intracutaneous do	.1 .2	28628. 58th and 59th transfer, pooled.	Jan. 21, 1929	Cutaneous	Immune reaction. Height, Jan 10 to 11, 1929.
688	28628. Testicular, fifty-ninth transfer.	Jan. 5, 1929	Cutaneous	-------	63 W. Commercial calf	Jan. 29, 1929	Cutaneous	Immune reaction. Height, Jan. 31, 1929.
689	28628. Testicular, fifty ninth transfer.	Jan. 5, 1929	Cutaneous	-------	63 W. Commercial calf	Jan. 29, 1929	Cutaneous	Immune reaction. Height, Feb. 1, 1929.
690	28628. Testicular, fifty-ninth transfer.	Jan. 5, 1929	Cutaneous	-------	63 W. Commercial calf	Jan. 29, 1929	Cutaneous	Immune reaction. Height, Jan. 31, 1929.
712	28628. Testicular, fifty-eighth and fifty-ninth transfers, pooled.	Jan. 8, 1929	Cutaneous	-------	-------	-------	-------	Typical severe "take."
713	28628. Testicular, fifty-eighth and fifty-ninth transfers, pooled.	Jan. 8, 1929	Cutaneous	-------	-------	-------	-------	Typical severe "take."
714	28628. Testicular, fifty-eighth and fifty-ninth transfers, pooled.	Jan. 8, 1929	Cutaneous	-------	-------	-------	-------	Typical severe "take."
712.5	63 W. Commercial calf.	Jan. 15, 1929	Cutaneous	-------	-------	-------	-------	Typical severe "take."
717	63 W. Commercial calf.	Jan. 15, 1929	Cutaneous	-------	-------	-------	-------	Typical severe "take."

TABLE 3.—*Cross-neutralization of commercial and heat-selected vaccine virus by antisera produced against the respective strains*

Virus-antiserum mixtures	Area of erythema in square centimeters			
	Dilution of virus 1:100	Dilution of virus 1:1,000	Dilution of virus 1:10,000	Dilution of virus 1:100,000
Commercial virus 63 W Antiserum 681 [1]	0.25	0	0	0
Commercial virus 63 W Antiserum 678 [2]	.75	.75	.1	0
Commercial virus 63 W Normal rabbit serum	1.5	1.0	1.0	.5
Heat-selected virus, sixty-first transfer Antiserum 681	3.0	1.0	.25	0
Heat-selected virus, sixty-first transfer Antiserum 678	4.0	1.5	1.0	0
Heat-selected virus, sixty-first transfer Normal rabbit serum	4.0	3.0	3.0	.4

[1] Antiserum 681 was from a rabbit vaccinated with the sixtieth transfer of the heat-selected strain of virus.
[2] Antiserum 678 was from a rabbit vaccinated with commercial dermo-virus 11717.

The neutralization tests were carried out by mixing equal quantities of the varying dilutions of virus, centrifuged to remove particles, and undiluted inactivated serum. After standing for 30 minutes the mixtures were injected intradermally in 0.1 c. c. amounts into the skin of rabbit No. 770. The recorded readings were made on the third day.

Coincident with the increase in the capacity of the strain to withstand a temperature of 37.5° C. there has been a notable increase in the diffuse virulence of the virus for animals, especially evidenced by its tendency to produce lesions in organs distant from the site of inoculation. This feature has deterred us from employing the strain in man and will be made the subject of a later communication.

Identity of the virus.—That we are actually dealing with a strain of vaccine virus is indicated in Table 2, which shows that virus from the fifty-eighth and fifty-ninth transfers of the heat-selected strain and strains of commercial vaccine gave mutual cross-protection in rabbits. From Table 3 it may be further noted that serum produced against the testicular strain possesses "viricidal" properties for commerical dermo-vaccine and that neutralization occurs in the opposite direction as well.

Complement fixing antibodies against commercial vaccine are produced in the sera of rabbits vaccinated subcutaneously with the heat-selected testicular strain.

The strain also produced typical Paul ulcers on the cornea of the rabbit which show cell inclusions similar to those usually described as Guarnieri bodies.

SUMMARY

Through continued selection and propagation, a strain of rabbit testicular smallpox vaccine of exalted virulence for animals has been developed which shows an increase of several hundred per cent in the period of time during which it will withstand a temperature of 37.5° C. and still give typical skin "takes" on rabbits. The sixty-first transfer

is potent after holding for 33 days and 3 hours at this temperature. The selective process is being continued, since the upper limit appears not yet to have been reached.

REFERENCES

(1) Henseval and Convent: Contributions à l'étude de la vaccine expérimentale; l'injection de vaccine dans le testicule. Bul. Acad. Royale de Méd. de Belg. (1910), **24**: 635–649.

(2) Ohtawara: Experimental studies on the process of formation of vaccinal immunity. Government Institute for Infectious Diseases (Japan). Scientific Reports: 1922, I: 203–246.

PHYSIOLOGICAL RESPONSE ATTENDING EXPOSURE TO VAPORS OF METHYL BROMIDE, METHYL CHLORIDE, ETHYL BROMIDE, AND ETHYL CHLORIDE

The activity in the development and progress of mechanical refrigeration, both for industrial and domestic use, has resulted in the employment of refrigerating media concerning the safety and toxic effects of which little information was available. As a consequence, a cooperative investigation was undertaken.

The report of the Bureau of Mines to the National Research Council and the Dow Chemical Co., published by the United States Public Health Service as Public Health Bulletin No. 185, gives the results of the investigation of physiological response attending the exposure of guinea pigs to vapors of methyl bromide, methyl chloride, ethyl bromide, and ethyl chloride. The conditions of exposure as regards concentrations of vapors and time of exposure, ranged from those causing no serious response, to those causing serious response after periods of a few minutes' to several hours' exposure.

Ethyl chloride was found to be the least toxic, while methyl bromide was found to be the most toxic. Methyl chloride and ethyl bromide occupied intermediate positions, in the respective order for short exposure to high concentrations and in the reverse order for long exposure to low concentrations. All four of these substances caused congestion, hemorrhage, and edema of the lungs. Congestion of other organs was present. Methyl bromide, however, produced the most marked cell degeneration. Animals dying after long exposure to low concentrations showed the greatest pathological changes. A distinct delayed effect was noted with methyl bromide and methyl chloride and, to a lesser extent, with ethyl bromide, but was not observed with ethyl chloride.

The symptoms for exposure to high concentrations were chiefly anesthetic in character for all substances, that is, excitement, loss of equilibrium, inability to walk, struggling, running motion of the legs, unconsciousness. With low concentrations and long exposure, the

principal symptoms were weakness, rapid pulse, rapid respiration, râles, and in some places frothy (often blood tinged) exudate from the nostrils. Ethyl chloride did not produce pronounced signs of lung irritation.

The Bureau of Mines entered on this study because of the fact that refrigerating appliances are installed in confined, poorly ventilated places and may be used for air conditioning in mines.

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EXTENT OF RURAL HEALTH SERVICE IN THE UNITED STATES, 1925–1929

By L. L. LUMSDEN, *Senior Surgeon, United States Public Health Service*

According to data obtained by the Rural Sanitation Office of the Public Health Service from the health departments of the States, the following (Table 1) is a list, by States, of counties (or districts) in which the rural sections at the beginning of the calendar years 1925, 1926, 1927, 1928, and 1929, respectively, were provided with local health service under the administration of whole-time county or (local) district health officers:

TABLE 1.—*List of counties or districts in which, as of January 1, 1925, 1926, 1927, 1928, and 1929, respectively, rural sections were provided with health service under whole-time local health officers*

1925	1926	1927	1928	1929
		ALABAMA		
Baldwin.	Baldwin.	Baldwin.	Baldwin.	Baldwin.
Barbour.	Barbour.	Barbour.	Barbour.	Barbour.
Calhoun.	Calhoun.	Calhoun.	Calhoun.	Blount.
Colbert.	Coffee.	Chambers.	Chambers.	Bullock.
Covington.	Colbert.	Coffee.	Coffee.	Calhoun.
Dallas.	Covington.	Colbert.	Colbert.	Chambers.
Escambia.	Dallas.	Covington.	Covington.	Cherokee.
Etowah.	Escambia.	Dallas.	Cullman.	Clarke.
Franklin.	Etowah.	Escambia.	Dale.	Cleburne.
Houston.	Franklin.	Etowah.	Dallas.	Coffee.
Jefferson.	Houston.	Franklin.	Elmore.	Colbert.
Lauderdale.	Jackson.	Houston.	Escambia.	Conecuh.
Limestone.	Jefferson.	Jackson.	Etowah.	Covington.
Madison.	Lauderdale.	Jefferson.	Franklin.	Crenshaw.
Marengo.	Lawrence.	Lauderdale.	Houston.	Cullman.
Marshall.	Lee.	Lawrence.	Jefferson.	Dale.
Mobile.	Limestone.	Lee.	Lauderdale.	Dallas.
Montgomery.	Madison.	Limestone.	Lawrence.	De Kalb.
Morgan.	Marengo.	Madison.	Lee.	Elmore.
Pike.	Marshall.	Marengo.	Limestone.	Escambia.
Sumter.	Mobile.	Marshall.	Madison.	Etowah.
Talladega.	Montgomery.	Mobile.	Marengo.	Franklin.

TABLE 1.—*List of counties or districts in which, as of January 1, 1925, 1926, 1927, 1928, and 1929, respectively, rural sections were provided with health service under whole-time local health officers*—Continued

1925	1926	1927	1928	1929
		ALABAMA—continued		
Tuscaloosa. Walker.	Morgan. Pike. Sumter. Talladega. Tuscaloosa. Walker.	Montgomery. Morgan. Pike. Sumter. Talladega. Tallapoosa. Tuscaloosa. Walker.	Marshall. Mobile. Monroe. Montgomery. Morgan. Pike. Sumter. Talladega. Tallapoosa. Tuscaloosa. Walker.	Houston. Jackson. Jefferson. Lamar. Lauderdale. Lawrence. Lee. Limestone. Lowndes. Macon. Madison. Marengo. Marshall. Mobile. Monroe. Montgomery. Morgan. Pickens. Pike. Shelby. Sumter. Talladega. Tallapoosa. Tuscaloosa. Walker. Washington. Wilcox. Winston.
		ARIZONA		
Cochise.	Cochise.	Cochise. Yuma.	Cochise. Coconino. Yuma.	Cochise. Coconino. Yuma.
		ARKANSAS		
	Garland. Jefferson. Pulaski.	Garland. Jefferson. Pulaski.	Arkansas. Ashley. Chicot. Conway. Crittenden. Cross. Desha. Drew. Garland. Jackson. Jefferson. Little River. Mississippi. Monroe. Phillips. Pope. Pulaski. Saline. Union. Woodruff. Yell.	Arkansas. Ashley. Chicot. Conway. Crittenden. Cross. Desha. Drew. Faulkner. Garland. Jackson. Jefferson. Little River. Mississippi. Monroe. Phillips. Pope. Pulaski. Saline. Sebastian. Union. White. Woodruff. Yell.

TABLE 1.—*List of counties or districts in which, as of January 1, 1925, 1926, 1927, 1928, and 1929, respectively, rural sections were provided with health service under whole-time local health officers*—Continued

1925	1926	1927	1928	1929
CALIFORNIA				
Los Angeles. Monterey. Orange. San Diego. San Joaquin. San Luis Obispo.	Los Angeles. Monterey. Orange. San Diego. San Joaquin. San Luis Obispo. Santa Barbara.	Los Angeles. Monterey. Orange. Riverside. San Diego. San Joaquin. San Luis Obispo. Santa Barbara. Yolo.	Los Angeles. Monterey. Orange. Riverside. San Diego. San Joaquin. San Luis Obispo. Santa Barbara. Yolo.	Contra Costa. Los Angeles. Madera. Monterey. Orange. Riverside. San Diego. San Joaquin. San Luis Obispo. Santa Barbara. Yolo.
COLORADO				
	Otero.	Otero.	Otero.	Otero.
CONNECTICUT				
Fairfield.[1]	Fairfield.[1]	Fairfield.[1]	Fairfield.[1]	Fairfield.[1]
FLORIDA				
	Polk.	Manatee. Polk. Sarasota.	Manatee. Polk. Sarasota.	Manatee. Polk. Sarasota.
GEORGIA				
Baldwin. Bartow. Bibb. Clarke. Cobb. Decatur. De Kalb. Dougherty. Floyd. Glynn. Hall. Laurens. Lowndes. Miller. Mitchell. Richmond. Seminole. Sumter. Thomas. Troup. Walker.	Baker. Baldwin. Bartow. Bibb. Clarke. Cobb. Decatur. De Kalb. Dougherty. Floyd. Glynn. Grady. Hall. Laurens. Lowndes. Mitchell. Richmond. Sumter. Thomas. Troup. Walker. Ware.	Baker. Baldwin. Bartow. Bibb. Brooks. Clarke. Cobb. Decatur. De Kalb. Dougherty. Floyd. Glynn. Grady. Hall. Laurens. Lowndes. Mitchell. Richmond. Spalding. Sumter. Thomas. Troup. Walker. Ware.	Baldwin. Bartow. Bibb. Brooks. Chatham. Clarke. Cobb. Coffee. Colquitt. Crisp. Decatur. De Kalb. Dougherty. Floyd. Glynn. Hall. Laurens. Lowndes. Mitchell. Richmond. Spalding. Sumter. Thomas. Troup. Walker. Ware. Washington.	Baldwin. Bartow. Bibb. Brooks. Chatham. Clarke. Cobb. Coffee. Colquitt. Crisp. Decatur. De Kalb. Dougherty. Emanuel. Floyd. Glynn. Grady. Hall. Laurens. Lowndes. Mitchell. Richmond. Spalding. Sumter. Thomas. Troup. Walker. Ware. Washington. Wayne. Worth.

[1] District.

TABLE 1.—*List of counties or districts in which, as of January 1, 1925, 1926, 1927, 1928, and 1929, respectively, rural sections were provided with health service under whole-time local health officers*—Continued

1925	1926	1927	1928	1929
ILLINOIS				
Cook. Crawford. Morgan. Sangamon.	Cook. Morgan. Sangamon.	Cook. Morgan. Sangamon.	Cook. Du Page. Morgan.	Cook. Du Page. Morgan. Pulaski.
IOWA				
Dubuque. Washington.	Dubuque.	Dubuque.		
KANSAS				
Cherokee. Geary. Lyon. Marion. Ottawa. Sheridan.	Butler. Coffey. Ellis. Geary. Jefferson. Lyon. Marion. McPherson. Ottawa. Phillips.	Butler. Coffey. Ellis. Geary. Jefferson. Lyon. Marion. Ottawa. Phillips.	Butler. Cherokee. Ellis. Geary. Greenwood. Jefferson. Lyon. Marion. Ottawa. Shawnee.	Brown. Butler. Cherokee. Geary. Greenwood. Jefferson. Lyon. Marion. Ottawa. Shawnee.
KENTUCKY				
Boyd. Daviess. Fayette. Fulton. Jefferson. Johnson. Mason. Scott.	Boyd. Daviess. Fayette. Fulton. Jefferson. Johnson. Mason. Scott.	Boyd. Daviess. Fayette. Fulton. Jefferson. Johnson. Knott. Mason. Scott.	Ballard. Boyd. Breathitt. Carlisle. Carter. Daviess. Elliott. Estill. Fayette. Floyd. Fulton. Henderson. Hickman. Hopkins. Johnson. Knott. Lawrence. Lee. Leslie. Letcher. Magoffin. Martin. Mason. McLean. Menefee. Morgan. Owsley. Perry. Pike. Scott. Webster. Wolfe.	Ballard. Bell. Boyd. Breathitt. Bullitt. Carlisle. Carter. Daviess. Elliott. Estill. Fayette. Floyd. Fulton. Henderson. Hickman. Hopkins. Johnson. Knott. Knox. Lawrence. Lee. Leslie. Letcher. Magoffin. Martin. Mason. McLean. Menefee. Monroe. Morgan. Ohio. Owsley. Perry. Pike. Scott. Trigg. Webster. Whitley. Wolfe.

TABLE 1.—*List of counties or districts in which, as of January 1, 1925, 1926, 1927, 1928, and 1929, respectively, rural sections were provided with health service under whole-time local health officers*—Continued

1925	1926	1927	1928	1929
LOUISIANA [2]				
Beauregard. Caddo. Claiborne. De Soto. Natchitoches. Ouachita. St. Mary. Tangipahoa. Washington.	Caddo. Claiborne. De Soto. Lafourche. Natchitoches. Ouachita. Plaquemines. St. Mary. Tangipahoa. Washington. Webster.	Caddo. Claiborne. De Soto. Lafourche. Natchitoches. Ouachita. Plaquemines. St. Mary. Washington. Webster.	Assumption. Avoyelles. Caddo. Caldwell. Catahoula. Claiborne. Concordia. De Soto. East Carroll. Franklin. Iberia. Lafayette. Lafourche. La Salle. Madison. Morehouse. Natchitoches. Ouachita. Plaquemines. Rapides. Richland. St. Martin. St. Mary. Tangipahoa. Tensas. Washington. Webster. West Carroll.	Assumption. Avoyelles. Caddo. Caldwell. Catahoula. Claiborne. Concordia. De Soto. East Carroll. Franklin. Iberia. Iberville. Lafayette. Lafourche. La Salle. Madison. Morehouse. Natchitoches. Ouachita. Point Coupee. Rapides. Richland. St. Landry. St. Martin. St. Mary. Tensas. Terrebonne. Webster. West Carroll.
MAINE				
Oldtown. Rumford. Sanford. Waterville. York.	Oldtown. Rumford. Sanford. Waterville. York.	Oldtown. Rumford. Sanford. Waterville. York.	Motbov Union.[3] Rumford.[4] Sanford.[4] Vassalborro.[4]	Motbov Union.[3] Rumford.[4] Sanford.[4] Vassalboro.[4]
MARYLAND				
Allegany. Baltimore. Calvert. Carroll. Frederick. Montgomery.	Allegany. Baltimore. Calvert. Carroll. Frederick. Montgomery.	Allegany. Baltimore. Calvert. Carroll. Frederick. Montgomery.	Allegany. Baltimore. Calvert. Carroll. Frederick. Montgomery. Prince Georges. Talbot.	Allegany. Baltimore. Calvert. Carroll. Frederick. Harford. Montgomery. Prince Georges. Talbot.
MASSACHUSETTS				
Cape Cod.[1]	Cape Cod.[1]	Cape Cod.[1]	Barnstable.[5]	Barnstable.
MICHIGAN				
				Oakland. Saginaw. Wexford.

[1] District.
[2] Parishes.
[3] Including towns of Orono, Milford, Bradley, and Veazie.
[4] Town (township) wholly or partly rural.
[5] See reprint No. 1184, p. 34, from Public Health Reports of Oct. 21, 1927.

TABLE 1.—*List of counties or districts in which, as of January 1, 1925, 1926, 1927, 1928, and 1929, respectively, rural sections were provided with health service under whole-time local health officers*—Continued

1925	1926	1927	1928	1929
MINNESOTA				
St. Louis.	St. Louis.	St. Louis.	St. Louis.	St. Louis.
MISSISSIPPI				
Bolivar. Coahoma. Forrest. Hancock. Harrison. Jackson. Jones. Lee. Pearl River. Sharkey. Washington.	Bolivar. Coahoma. Forrest. Hancock. Harrison. Hinds. Jackson. Jones. Lee. Leflore. Pearl River. Sharkey. Washington.	Bolivar. Clarke. Coahoma. Forrest. Hancock. Harrison. Hinds. Holmes. Jackson. Jones. Lamar. Lee. Leflore. Pearl River. Perry. Sharkey. Union. Washington.	Bolivar. Clarke. Coahoma. Forrest. Hancock. Harrison. Hinds. Holmes. Humphreys. Issaquena. Jackson. Jones. Lamar. Lee. Leflore. Pearl River. Perry. Sharkey. Sunflower. Tishomingo. Union. Warren. Washington. Yazoo.	Adams. Bolivar. Clarke. Coahoma. Copiah. Forrest. Hancock. Harrison. Hinds. Holmes. Humphreys. Issaquena. Jackson. Jones. Lamar. Lauderdale. Lee. Leflore. Lincoln. Monroe. Pearl River. Perry. Sharkey. Sunflower. Tishomingo. Union. Warren. Washington. Yazoo.
MISSOURI				
Dunklin. Gentry. Greene. New Madrid. Nodaway. Pettis. Polk. St. Francois. St. Louis.	Boone. Dunklin. Greene. Jackson. New Madrid. Nodaway. Pemiscot. Pettis. Polk. St. Francois. St. Louis.	Boone. Dunklin. Greene. Holt. Jackson. Marion. New Madrid. Nodaway. Pemiscot. Pettis. St. Francois. St. Louis.	Boone. Dunklin. Greene. Holt. Jackson. Marion. Mississippi. New Madrid. Nodaway. Pemiscot. Pettis. Scott. St. Francois. St. Louis.	Boone. Dunklin. Greene. Jackson. Marion. Mississippi. New Madrid. Nodaway. Pemiscot. St. Francois. St. Louis. Scott.
MONTANA				
Cascade. Lewis and Clark. Missoula.	Cascade. Lewis and Clark. Missoula.	Cascade. Lewis and Clark. Missoula.	Cascade. Lewis and Clark. Missoula.	Cascade. Lewis and Clark. Missoula.
NEW MEXICO				
Bernalillo. Chaves. Colfax. Dona Ana. Eddy. McKinley. San Miguel. Santa Fe. Union. Valencia.	Bernalillo. Chaves. Colfax. Dona Ana. Eddy. McKinley. Santa Fe. Union. Valencia.	Bernalillo. Chaves. Dona Ana. Eddy. McKinley. Santa Fe. San Miguel. Union. Valencia.	Bernalillo. Chaves. Dona Ana. Eddy. McKinley. Santa Fe. Union. Valencia.	Bernalillo. Chaves. Dona Ana. Eddy. Santa Fe. Union. Valencia.

TABLE 1.—*List of counties or districts in which, as of January 1, 1925, 1926, 1927, 1928, and 1929, respectively, rural sections were provided with health service under whole-time local health officers*—Continued

1925	1926	1927	1928	1929
NEW YORK				
Cattaraugus.	Cattaraugus.	Cattaraugus.	Cattaraugus.	Cattaraugus. Suffolk.
NORTH CAROLINA				
Beaufort. Bertie. Bladen. Brunswick. Buncombe. Cabarrus. Columbus. Craven. Cumberland. Davidson. Durham. Edgecombe. Forsyth. Granville. Guilford. Halifax. Henderson. Hyde. Lenoir. Mecklenburg. New Hanover. Northampton. Pamlico. Pitt. Richmond. Robeson. Rowan. Rutherford. Sampson. Surry. Vance. Wake. Wayne. Wilkes. Wilson.	Beaufort. Bertie. Bladen. Brunswick. Buncombe. Cabarrus. Columbus. Craven. Cumberland. Davidson. Durham. Edgecombe. Forsyth. Granville. Guilford. Halifax. Henderson. Johnston. Lenoir. Mecklenburg. New Hanover. Northampton. Pamlico. Pitt. Richmond. Robeson. Rowan. Rutherford. Sampson. Surry. Vance. Wake. Wayne. Wilkes. Wilson.	Beaufort. Bertie. Bladen. Brunswick. Buncombe. Cabarrus. Carteret. Columbus. Craven. Cumberland. Davidson. Durham. Edgecombe. Forsyth. Granville. Guilford. Halifax. Henderson. Johnston. Lenoir. Mecklenburg. Nash. New Hanover. Northampton. Pamlico. Pitt. Richmond. Robeson. Rowan. Rutherford. Sampson. Surry. Vance. Wake. Wayne. Wilkes. Wilson.	Beaufort. Bertie. Bladen. Brunswick. Buncombe. Cabarrus. Carteret. Columbus. Craven. Cumberland. Davidson. Durham. Edgecombe. Forsyth. Granville. Guilford. Halifax. Henderson. Johnston. Lenoir. Mecklenburg. Nash. New Hanover. Northampton. Pamlico. Pitt. Richmond. Robeson. Rowan. Rutherford. Sampson. Surry. Vance. Wake. Wayne. Wilkes. Wilson.	Beaufort. Bertie. Bladen. Brunswick. Buncombe. Cabarrus. Columbus. Craven. Cumberland. Davidson. Durham. Edgecombe. Forsyth. Gaston. Granville. Guilford. Halifax. Henderson. Johnston. Lenoir. Mecklenburg. Moore. Nash. New Hanover. Northampton. Pamlico. Pitt. Richmond. Randolph. Robeson. Rowan. Rutherford. Sampson. Surry. Vance. Wake. Wayne. Wilkes. Wilson.
OHIO				
Allen. Ashtabula. Athens. Belmont. Butler. Clermont. Clinton. Columbiana. Coshocton. Crawford. Cuyahoga. Delaware. Erie. Fayette. Franklin. Geauga. Hamilton. Hancock. Hocking. Huron. Lake. Lorain. Lucas. Mahoning. Marion.	Allen. Ashtabula. Athens. Belmont. Butler. Clermont. Clinton. Columbiana. Coshocton. Crawford. Cuyahoga. Delaware. Erie. Fayette. Franklin. Geauga. Hamilton. Hancock. Hocking. Huron. Jefferson. Lake. Lorain. Lucas. Mahoning.	Allen. Ashtabula. Belmont. Butler. Clermont. Clinton. Columbiana. Coshocton. Crawford. Cuyahoga. Darke. Delaware. Erie. Fayette. Geauga. Hamilton. Hancock. Hocking. Huron. Jefferson. Lake. Lorain. Lucas. Mahoning. Marion.	Allen. Ashtabula. Belmont. Butler. Clermont. Clinton. Columbiana. Coshocton. Crawford. Cuyahoga. Darke. Delaware. Erie. Fayette. Franklin. Geauga. Hamilton. Hancock. Hocking. Huron. Jefferson. Lake. Lorain. Lucas. Mahoning.	Allen. Ashtabula. Belmont. Butler. Clinton. Columbiana. Coshocton. Crawford. Cuyahoga. Darke. Delaware. Erie. Fayette. Franklin. Geauga. Hamilton. Hancock. Hocking. Huron. Jefferson. Lake. Lorain. Lucas. Mahoning. Marion.

TABLE 1.—*List of counties or districts in which, as of January 1, 1925, 1926, 1927, 1928, and 1929, respectively, rural sections were provided with health service under whole-time local health officers*—Continued

1925	1926	1927	1928	1929
		OHIO—continued		
Meigs. Mercer. Miami. Montgomery. Morrow. Muskingum. Paulding. Perry. Richland. Ross. Sandusky. Scioto. Seneca. Shelby. Stark. Summit. Trumbull. Tuscarawas. Union. Washington. Wayne. Wood.	Marion. Meigs. Mercer. Miami. Montgomery. Morrow. Muskingum. Perry. Richland. Ross. Sandusky. Scioto. Seneca. Shelby. Stark. Summit. Trumbull. Tuscarawas. Union. Washington. Wayne. Wood.	Meigs. Mercer. Miami. Montgomery. Morrow. Muskingum. Perry. Preble. Richland. Ross. Sandusky. Scioto. Seneca. Shelby. Stark. Summit. Trumbull. Tuscarawas. Union. Washington. Wayne. Wood.	Marion. Meigs. Mercer. Miami. Montgomery. Morrow. Muskingum. Perry. Preble. Richland. Ross. Sandusky. Scioto. Seneca. Shelby. Stark. Summit. Trumbull. Tuscarawas. Washington. Wayne. Wood.	Meigs. Mercer. Miami. Montgomery. Morrow. Perry. Preble. Richland. Ross. Sandusky. Scioto. Seneca. Shelby. Stark. Summit. Trumbull. Tuscarawas. Washington. Wayne. Wood.
		OKLAHOMA		
Carter. Le Flore. Muskogee. Oklahoma. Pittsburg.	Carter. Le Flore. McCurtain. Muskogee. Oklahoma. Okmulgee. Ottawa. Pittsburg.	Carter. Kay. Le Flore. McCurtain. Muskogee. Oklahoma. Okmulgee. Ottawa. Pittsburg.	Carter. Kay. Le Flore. McCurtain. Muskogee. Okmulgee. Ottawa. Pittsburg. Seminole.	Carter. Kay. Le Flore. McCurtain. Muskogee. Okmulgee. Osage. Ottawa. Pittsburg. Seminole.
		OREGON		
Clackamas. Coos. Douglas. Jackson. Klamath.	Clackamas. Coos. Douglas. Jackson. Klamath.	Clackamas. Coos. Douglas. Jackson. Klamath.	Clackamas. Coos. Douglas. Jackson. Klamath. Marion. Multnomah.	Clackamas. Coos. Douglas. Jackson. Klamath. Marion. Multnomah.
		SOUTH CAROLINA		
Aiken. Anderson. Beaufort. Charleston. Cherokee. Colleton. Darlington. Dillon. Fairfield. Georgetown. Greenville. Marion. Newberry. Orangeburg.	Aiken. Anderson. Beaufort. Charleston. Cherokee. Colleton. Darlington. Dillon. Fairfield. Georgetown. Greenville. Greenwood. Marion. Newberry. Orangeburg. Spartanburg.	Aiken. Anderson. Beaufort. Charleston. Cherokee. Darlington. Dillon. Fairfield. Georgetown. Greenville. Greenwood. Horry. Marion. Newberry. Orangeburg. Spartanburg.	Aiken. Anderson. Beaufort. Charleston. Cherokee. Darlington. Dillon. Fairfield. Georgetown. Greenville. Greenwood. Horry. Marion. Newberry. Orangeburg. Spartanburg.	Aiken. Anderson. Beaufort. Berkeley. Charleston. Cherokee. Darlington. Dillon. Dorchester. Fairfield. Georgetown. Greenville. Greenwood. Horry. Marion. Newberry. Oconee. Orangeburg. Richland. Spartanburg.

TABLE 1.—*List of counties or districts in which, as of January 1, 1925, 1926, 1927, 1928, and 1929, respectively, rural sections were provided with health service under whole-time local health officers*—Continued

1925	1926	1927	1928	1929
SOUTH DAKOTA				
Brown. Pennington. Yankton.	Brown. Pennington. Yankton.	Brown. Pennington.	Pennington.	Pennington.
TENNESSEE				
Blount. Davidson. Gibson. Montgomery. Obion. Roane. Rutherford. Sevier. Williamson.	Blount. Davidson. Dyer. Gibson. Hamilton. Montgomery. Obion. Roane. Rutherford. Sevier. Weakley. Williamson.	Blount. Davidson. Dyer. Gibson. Hamilton. Lauderdale. Montgomery. Obion. Roane. Rutherford. Sevier. Shelby. Weakley. Williamson.	Blount. Bradley. Davidson. Dyer. Gibson. Hamilton. Lake. Lauderdale. Montgomery. Obion. Roane. Rutherford. Sevier. Shelby. Washington. Weakley. Williamson.	Blount. Bradley. Carter. Davidson. Dyer. Gibson. Greene. Hamilton. Knox. Lake. Lauderdale. Monroe. Montgomery. Obion. Roane. Rutherford. Sevier. Shelby. Sullivan. Washington. Weakley. Williamson. Wilson.
TEXAS				
Falls. Hidalgo. Nueces. Tarrant.	Cameron. Hidalgo. Jefferson. McLennan. Tarrant.	Cameron. Hidalgo. Jefferson. McLennan. Tarrant.	Cameron. Hidalgo. McLennan. Tarrant.	Cameron. Hidalgo. McLennan. Tarrant.
UTAH				
Davis. Weber.	Davis. Weber.	Box Elder. Davis. Morgan. Summit. Wasatch. Weber.	Box Elder. Davis. Summit. Utah. Wasatch.	Box Elder. Davis. Utah.
VIRGINIA				
Accomac. Albemarle. Arlington. Augusta. Brunswick. Fairfax. Halifax. Henrico. Isle of Wight. James City. Nansemond. Northampton. Wise.	Accomac. Albemarle. Arlington. Augusta. Brunswick. Fairfax. Halifax. Henrico. Isle of Wight. James City. Nansemond. Northampton. Sussex. Wise.	Accomac. Albemarle. Arlington. Augusta. Brunswick. Fairfax. Halifax. Henrico. Isle of Wight. James City. Nansemond. Northampton. Southampton. Sussex. Wise.	Accomac. Albemarle. Arlington. Augusta. Brunswick. Halifax. Henrico. Isle of Wight. Nansemond. Norfolk. Northampton. Princess Anne. Rockbridge. Southampton.	Accomac. Albemarle. Arlington. Augusta. Brunswick. Greensville. Halifax. Henrico. Isle of Wight. Nansemond. Norfolk. Northampton. Princess Anne. Rockbridge. Southampton. Wise.

TABLE 1.—*List of counties or districts in which, as of January 1, 1925, 1926, 1927, 1928, and 1929, respectively, rural sections were provided with health service under whole-time local health officers*—Continued

1925	1926	1927	1928	1929
WASHINGTON				
Chelan. King. Spokane. Walla Walla. Yakima.	Chelan. King. Walla Walla. Yakima.	Chelan. King. Snohomish. Spokane. Walla Walla. Yakima.	Chelan. King. Snohomish. Spokane. Walla Walla. Whitman. Yakima.	Chelan. King. Snohomish. Spokane. Walla Walla. Whitman. Yakima.
WEST VIRGINIA				
Gilmer. Hancock. Harrison. Logan. Marion. Marshall. Preston. Taylor.	Gilmer. Hancock. Harrison. Logan. Marion. Marshall. Preston. Roane.	Boone. Brooke. Gilmer. Hancock. Harrison. Kanawha. Logan. Marion. Marshall. Ohio. Preston. Roane. Wood.	Berkeley. Boone. Brooke. Gilmer. Hancock. Harrison. Kanawha. Lewis. Logan. Marion. Marshall. Ohio. Preston. Wood.	Berkeley. Boone. Brooke. Fayette. Gilmer. Hancock. Harrison. Kanawha. Logan. Marion. Ohio. Preston. Raleigh. Wood.
WYOMING				
Natrona.	Natrona.	Natrona.	Natrona.	Natrona.

Résumé of Table 1

State	Number of counties Jan. 1					Increase or decrease in 1925	Increase or decrease in 1926	Increase or decrease in 1927	Increase or decrease in 1928
	1925	1926	1927	1928	1929				
Alabama	24	28	30	33	50	+4	+2	+3	+17
Arizona	1	1	2	3	3		+1	+1	
Arkansas		3	3	21	24	+3		+18	+3
California	6	7	9	9	11	+1	+2		+2
Colorado		1	1	1	1	+1			
Connecticut	1	1	1	1	1				
Florida		1	3	3	3	+1	+2		
Georgia	21	22	24	27	31	+1	+2	+3	+4
Illinois	4	3	3	3	4	−1			+1
Iowa	2	1	1			−1		−1	
Kansas	6	10	9	10	10	+4	−1	+1	
Kentucky	8	8	9	32	39		+1	+23	+7
Louisiana	9	11	10	28	29	+2	−1	+18	+1
Maine	5	5	5	4	4			−1	
Maryland	6	6	6	8	9			+2	+1
Massachusetts	1	1	1	1	1				
Michigan					[1] 3				+3
Minnesota	1	1	1	1	1				
Mississippi	11	13	18	24	29	+2	+5	+6	+5
Missouri	9	11	12	14	12	+2	+1	+2	−2
Montana	3	3	3	3	3				
New Mexico	10	9	9	8	7	−1		−1	−1
New York	1	1	1	1	2				+1
North Carolina	35	35	37	37	39		+2		+2
Ohio	47	47	47	47	45				−2

[1] Information that 2 units were operating in Michigan on Jan. 1, 1928, was not received until after publication of the report on Extent of Rural Health Service in the United States, 1924–1928 (Reprint No. 1220 from Public Health Reports of Apr. 13, 1928), and consequently the item was not included in the list in that report.

Résumé of Table 1—Continued

State	Number of counties Jan. 1					Increase or decrease in 1925	Increase or decrease in 1926	Increase or decrease in 1927	Increase or decrease in 1928
	1925	1926	1927	1928	1929				
Oklahoma	5	8	9	9	10	+3	+1	.....	+1
Oregon	5	5	5	7	7	.....	.....	+2	.....
South Carolina	14	16	16	16	20	+2	.....	.....	+4
South Dakota	3	3	2	1	1	.....	−1	−1	.....
Tennessee	9	12	14	17	23	+3	+2	+3	+6
Texas	4	5	5	4	4	+1	.....	−1	.....
Utah	2	2	6	5	3	.....	+4	−1	−2
Virginia	13	14	15	14	16	+1	+1	−1	+2
Washington	5	4	6	7	7	−1	+2	+1	.....
West Virginia	8	8	13	14	14	.....	+5	+1	.....
Wyoming	1	1	1	1	1	.....	.....	.....	.....
Total	280	307	337	414	467	+27	+30	+77	+53

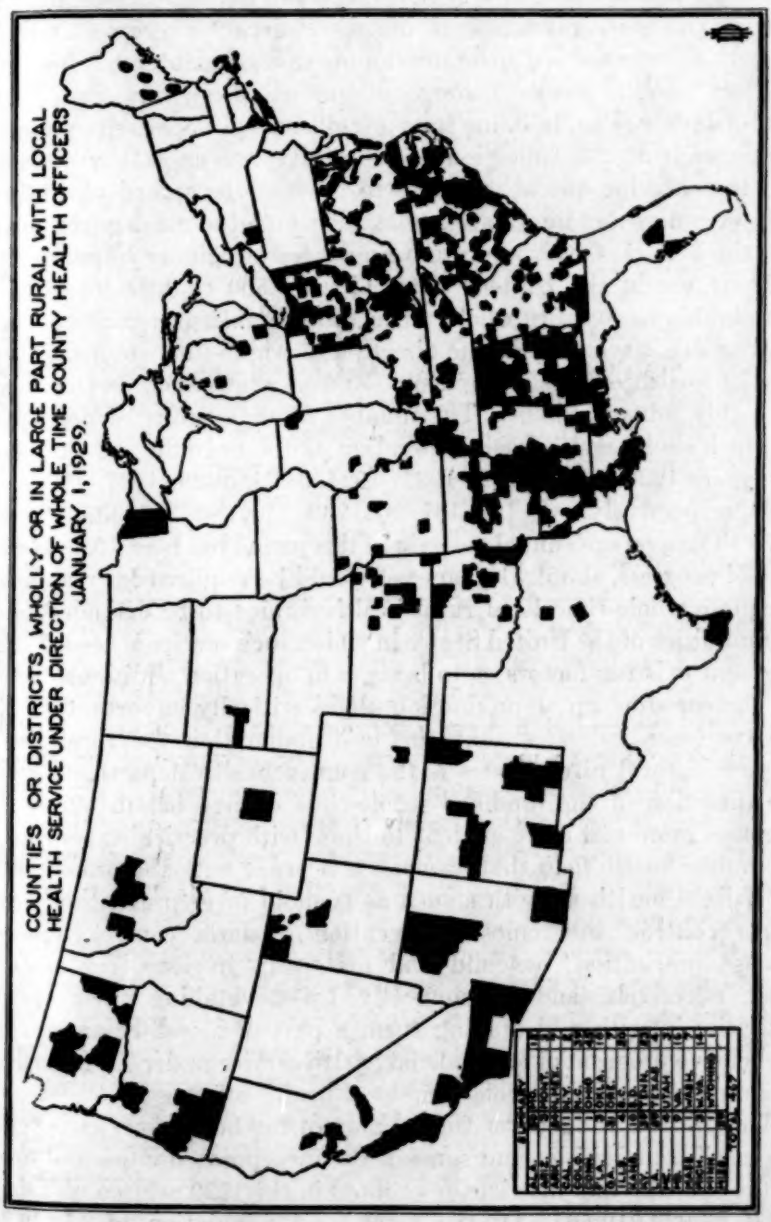
The accompanying map shows the location of the counties or districts in the United States in the rural sections of which local health service under the direction of whole-time local (county or district) health officers was in operation on January 1, 1929.

Within the period January 1, 1928, to January 1, 1929, whole-time county or (local) district health officer service was established in 60 units and was discontinued in 7—a net gain of 53. The biggest gain in one State was that of 17 in Alabama. Over 79 per cent of the rural population of that State is now provided with county health service under the direction of whole-time county health officers. The development has been on a cooperative basis, the State board of health contributing financially to all the projects and the United States Public Health Service and the Rockefeller Foundation contributing to many of them. The outstanding progress in well-rounded, effective, economical, whole-time rural health service in Alabama is attributable mainly to the splendid administration of a great State health officer, Dr. Samuel Wallace Welch, who died (August 22, 1928) at a time when the results of his work were being realized in full measure.

Of the 467 counties or districts with local health service under whole-time local (county or district) health officers at the beginning of the present calendar year, 419, or 88 per cent, are receiving financial assistance for the support of their local health service from one or more of the following agencies: The State board of health, the United States Public Health Service, the Rockefeller Foundation, the Children's Bureau of the United States Department of Labor.

Without assistance from outside agencies, local governments of rural communities (counties, towns, townships, or districts) in general are not disposed to appropriate adequately for the support of efficient, whole-time, local health service. Some local governments even when offered such assistance decline to appropriate their part of the budget for the service; but, according to all the evidence,

development in this vitally important field of general welfare could be greatly increased by provision (which could be made at comparatively small governmental cost) to enable the State health depart-



ments and the Federal health service to offer to counties now willing to accept, and to those which would soon become willing to accept, adequate technical advice along with financial cooperation on a basis

of $1 of Federal money and $3 of State money to meet four or more dollars of county money.

As health conditions in a rural community in one State influence those in other communities in that State and in other States, it seems that all the State governments and the Federal Government may be properly concerned with the development and maintenance of efficient local health service throughout our extensive rural area. The local health service, in doing its work efficiently, necessarily performs duties such as the collection of morbidity and mortality statistics and the carrying out of measures to prevent the spread of infection in intercounty and interstate traffic, for which the State governments and the Federal Government have a degree of definite responsibility.

There are in the United States about 2,500 counties or districts comparable to counties wholly or in considerable part rural to which local health service under the direction of whole-time county or local district health officers is applicable and in which such service would be highly advantageous. The number of these units of population in which such service was in operation at the beginning of the calendar years 1920, 1921, 1922, 1923, 1924, 1925, 1926, 1927, 1928, and 1929, respectively, was 109, 161, 202, 230, 250, 280, 307, 337, 414, and 467. The average annual net gain in this period has been 40. At such rate of progress, about 51 years yet would be required for reasonably adequate whole-time local rural health service to be extended to all communities of the United States in which such service is needed. To augment existing factors or to bring into operation additional factors for the speeding up of production seems critically important.

Experience indicates that the best foundation for rural health service in the United States is the county health department under the direction of the qualified whole-time county health officer. It becomes more and more evident to those with practical experience in the public health field that agencies concerned with the promotion of specialized health activities, such as typhoid fever prevention, hookworm control, tuberculosis prevention, malaria control, venereal disease prevention, or child and maternity hygiene, can perform most effectively and economically by dovetailing their specific activities in with and making them a part of a well-balanced comprehensive program of local official health service under the immediate direction of qualified whole-time local health officers.

The present budgets for the support of the health service covering the rural communities and some of the incorporated cities and towns in the counties and districts designated in the 1929 column of Table 1 total $7,029,019.56.[1] Of the total local population of 17,439,240

[1] Of this amount, $1,157,467 is covered by the budget of one county alone—Los Angeles County, Calif. The population of this county, exclusive of that of the city of Los Angeles, is now very much larger than is indicated by the census figures for 1920, which are used in the calculations in this report. If the Los Angeles County budget were not included, the average budget for the remaining 466 units would be $12,500.89.

receiving this service, 5,833,270, or 33.45 per cent, are urban. Therefore, about $4,677,812.52 of the total investment for the local health service in these 467 projects will be expended this year for strictly rural health service.

Efficient, well-balanced, whole-time rural health service throughout this country would cost about $20,000,000 a year. Apart from

STATE	WHOLE-TIME COUNTY (OR LOCAL DISTRICT) HEALTH UNITS AS OF JANUARY 1ST '25	'26	'27	'28	'29	PERCENTAGE OF RURAL POPULATION SERVED AS OF JANUARY 1, 1929.
ALABAMA	24	28	30	33	50	79.48
OHIO	47	47	47	47	45	58.37
LOUISIANA	9	11	10	28	29	53.78
N. CAROLINA	35	35	37	37	39	52.97
MARYLAND	6	6	6	8	9	52.59
S. CAROLINA	14	16	16	16	20	50.44
MISSISSIPPI	11	13	18	24	29	41.38
ARKANSAS	0	3	3	21	24	38.85
WASHINGTON	5	4	6	7	7	38.15
W. VIRGINIA	8	8	13	14	14	37.22
TENNESSEE	9	12	14	17	23	35.64
KENTUCKY	8	8	9	32	39	35.34
CALIFORNIA	6	7	9	9	11	33.29
OREGON	5	5	5	7	7	32.63
GEORGIA	21	22	24	27	31	27.30
NEW MEXICO	10	9	9	8	7	26.98
VIRGINIA	13	14	15	14	16	24.41
ARIZONA	1	1	2	3	3	20.68
OKLAHOMA	5	8	9	9	10	19.28
MISSOURI	9	11	12	14	12	17.77
UTAH	2	2	6	5	3	16.91
KANSAS	6	10	9	10	10	14.32
MONTANA	3	3	3	3	3	8.48
MASSACHUSETTS	1	1	1	1	1	8.19
NEW YORK	1	1	1	1	2	7.30
FLORIDA	0	1	3	3	3	6.89
ILLINOIS	4	3	3	3	4	6.36
MICHIGAN	0	0	0	0	3	6.13
MAINE	5	5	5	4	4	5.58
TEXAS	4	5	5	4	4	3.99
MINNESOTA	1	1	1	1	1	3.81
COLORADO	0	1	1	1	1	2.86
CONNECTICUT	1	1	1	1	1	2.58
WYOMING	1	1	1	1	1	2.33
S. DAKOTA	3	3	2	1	1	1.30
IOWA	2	1	1	0	0	0.00
TOTALS	280	307	337	414	467	22.58

the loss in human life, human health, and human happiness, our national economic loss annually in wage earnings and in other items incident to preventable sickness because of lack of reasonably efficient county health service is estimated at over $1,000,000,000. Money invested for well-directed whole-time county health service yields to

the average local tax-paying citizen an annual dividend in dollars and cents ranging under different local conditions from 100 to 3,000 per cent.

All evidence obtained in the course of prolonged studies of the subject supports the claim that the dollar invested for well-directed comprehensive whole-time county health service yields to the public welfare more than any other dollar obtainable by taxation of the people can be made to yield in normal times.

The practical value of previously organized whole-time county health units in times of disaster was remarkably demonstrated in the flood in the Mississippi Valley in 1927.

Table 2 presents, by States, the percentage of rural population having local health service under the direction of whole-time local (county or district) health officers at the beginning of 1929.

The accompanying chart [2] shows, by States, the number of counties or local districts with health service under the direction of whole-time county or local district health officers as of January 1, 1925, 1926, 1927, 1928, and 1929, and the percentage of the rural population of each State receiving such service on January 1, 1929.

TABLE 2.—*Percentage of rural population having on January 1, 1929, local health service under whole-time local (county or district) health officers*

State	Rural population (census 1920)	Rural population with local health service under direction of whole-time health officers	Percentage of rural population with local health service under direction of whole-time health officers	State	Rural population (census 1920)	Rural population with local health service under direction of whole-time health officers	Percentage of rural population with local health service under direction of whole-time health officers
Alabama	1,838,857	1,461,596	79.48	Nevada	62,153	0	0
Arizona	216,635	44,807	20.68	New Hampshire	163,322	0	0
Arkansas	1,461,707	568,014	38.85	New Jersey	680,964	0	0
California	1,095,132	364,609	33.29	New Mexico	295,390	79,704	26.98
Colorado	486,370	13,913	2.86	New York	1,795,383	131,129	7.30
Connecticut	444,292	11,475	2.58	North Carolina	2,068,753	1,095,734	52.97
Delaware	102,236	0	0	North Dakota	558,633	0	0
Florida	612,645	42,240	6.89	Ohio	2,082,258	1,215,442	58.37
Georgia	2,167,973	591,958	27.30	Oklahoma	1,488,803	287,061	19.28
Idaho	312,829	0	0	Oregon	392,370	128,014	32.63
Illinois	2,082,127	132,336	6.36	Pennsylvania	3,112,202	0	0
Indiana	1,447,535	0	0	Rhode Island	15,217	0	0
Iowa	1,528,526	0	0	South Carolina	1,389,737	703,975	50.44
Kansas	1,151,293	164,913	14.32	South Dakota	534,675	6,943	1.30
Kentucky	1,783,087	630,141	35.34	Tennessee	1,726,659	615,342	35.64
Louisiana	1,170,346	629,387	53.78	Texas	3,150,539	125,584	3.99
Maine	468,445	26,136	5.58	Utah	233,812	39,527	16.91
Maryland	580,239	305,165	52.59	Vermont	242,452	0	0
Massachusetts	202,108	16,562	8.19	Virginia	1,635,203	399,111	24.41
Michigan	1,426,852	87,527	6.13	Washington	607,886	231,888	38.15
Minnesota	1,335,532	50,898	3.81	West Virginia	1,094,694	407,464	37.22
Mississippi	1,550,497	641,532	41.38	Wisconsin	1,387,499	0	0
Missouri	1,817,152	322,953	17.77	Wyoming	137,054	3,188	2.33
Montana	376,878	32,711	8.68				
Nebraska	891,066	0	0	Total	51,406,017	11,605,970	22.58

[1] Design is credited to Alabama State Board of Health.

Over 77 per cent of our rural population is as yet unprovided with official local health service approaching adequacy. As a consequence of this deficiency, there is a sacrifice of the health and lives and the material resources of many of our people every year—a sacrifice which is needless because preventable, and preventable by measures readily within our means and demonstrated to be in the highest sense economical.

DEATH RATES IN A GROUP OF INSURED PERSONS

Rates for Principal Causes of Death, March, 1929, and Summary for First Quarter of 1929

The accompanying table, taken from the Statistical Bulletin for April, 1929, issued by the Metropolitan Life Insurance Co., presents the mortality record of the industrial insurance department of the company for March, 1929, and cumulative rates for January to March, for principal causes of death. The rates are based on a strength of approximately 18,500,000 insured persons in the United States and Canada.

The death rate for this group was somewhat lower for March, 1929, than for the preceding month, and also lower than for March of last year. As compared with the same month a year ago, there were large declines in the mortality from measles, diphtheria, tuberculosis, heart disease, pneumonia, and Bright's disease, and smaller declines for several other causes. On the other hand, appreciably higher rates were registered for influenza and automobile accidents and smaller increases for a few other conditions.

Death rates (annual basis) per 100,000 for principal causes of death

[Industrial department, Metropolitan Life Insurance Co.]

Cause of death	Death rate per 100,000 lives exposed *				
	March, 1929	February, 1929	March, 1928	Cumulative, January to March—	
				1929	1928
Total, all causes	980.5	1,135.6	1,027.0	1,153.8	978.2
Typhoid fever	1.7	.8	1.3	1.4	1.6
Measles	3.5	4.2	7.7	3.8	5.5
Scarlet fever	2.8	3.4	3.4	3.5	3.8
Whooping cough	5.1	7.2	6.2	7.3	5.2
Diphtheria	8.7	9.8	11.4	10.7	13.1
Influenza	53.1	104.4	34.8	122.3	30.6
Tuberculosis (all forms)	92.0	94.0	100.1	94.0	92.8
Tuberculosis of respiratory system	80.9	84.5	88.6	83.8	81.6
Cancer	72.3	74.3	74.8	76.4	75.8
Diabetes mellitus	20.6	22.2	20.4	23.8	19.6
Cerebral hemorrhage	57.3	66.0	59.6	65.2	60.7
Organic diseases of heart	154.2	181.0	160.7	179.6	154.6
Pneumonia (all forms)	128.7	160.4	137.3	164.6	122.4
Other respiratory diseases	20.3	22.0	21.9	16.9	14.9
Diarrhea and enteritis	12.8	13.7	14.7	13.7	14.3
Bright's disease (chronic nephritis)	72.0	79.5	82.3	79.3	79.7
Puerperal state	14.0	14.7	13.8	15.0	14.1
Suicides	8.5	8.0	9.3	8.4	7.9
Homicides	5.4	6.8	6.2	6.3	6.3
Other external causes (excluding suicides and homicides)	50.8	55.5	48.3	56.5	55.9
Traumatism by automobiles	13.3	12.6	11.2	15.1	14.3
All other causes	196.6	207.6	212.5	205.2	199.4

* All figures include infants insured under 1 year of age.

Health conditions in this insured group were less favorable during the first quarter of 1929 than during the corresponding period of any year since 1920. The death rate for all causes for the first three months of 1929 was 11.5 per 1,000, as compared with 13.9 for the similar period of 1920. The next highest rate for the first quarter during the 10-year period 1920–1929 was that recorded in 1923, namely, 11.1 per 1,000.

The higher death rates seem to be generally distributed throughout all sections of the United States and in Canada, and are stated to be due almost entirely to the effects, direct and indirect, of the recent influenza epidemic.

Tuberculosis shows a small increase in mortality for the first three months as compared with 1928. This increase was confined entirely to the white policyholders.

No improvement is noted with respect to cancer. A new maximum death rate for this disease was recorded for this group of persons in 1928, and the first quarter of 1929 registered an increase over the rate for the corresponding period of last year. While the increase is small, it indicates a persistent rise in the mortality from cancer.

The death rate for diabetes was the highest ever recorded for any three months' period.

The combined death rate for the three principal "degenerative" diseases increased markedly as compared with last year. The largest increase was recorded for heart disease.

During the first quarter of 1929 there were 251 deaths from meningococcus meningitis, as compared with 67 during the corresponding period of last year.

Higher death rates were also recorded for puerperal causes, alcoholism, and cirrhosis of the liver, and for automobile accidents, while lower rates were registered for diphtheria, measles, and scarlet fever.

COURT DECISION RELATING TO PUBLIC HEALTH

Act decreasing term of office of president of State board of health held valid.—(Louisiana Supreme Court; State ex rel. Saint, Atty. Gen., et al. *v.* Dowling, 120 So. 593; decided November 26, 1928, and January 28, 1929, on application for rehearing.) Under authority of section 2 of Act 79 of 1921 the respondent was appointed president of the State board of health for a term of seven years expiring on August 29, 1932. Act 126 of 1928, among other things, repealed section 2 of Act 79 of 1921 and prescribed a four-year term of office for the president of the State board of health. Under the 1928 act

another person than respondent was appointed president for a four-year term. Suit was brought to oust the respondent from the office and to declare the new appointee entitled to same. Respondent asserted that the 1928 act was violative of several provisions of the State constitution, but the supreme court held that said act was constitutional and valid and that the new appointee was entitled to the office of president of the board. The following points, briefly stated, were among those decided by the court:

(1) The 1928 act complied with the constitutional requirement that every law shall embrace but one object and shall have a title indicative of such object.

(2) The president of the State board of health was a member of the board, the constitution itself declaring that "the State board of health shall be composed of a president * * * and eight members * * *."

(3) The 1928 act did not purport to revive section 1 and sections 3 to 18 of Act 79 of 1921 (sections 3, 4, 5, 11, and 13 of which had been amended and reenacted—and thereby repealed—by Act 296 of 1926), but merely declared that those sections "shall not be affected" by the 1928 act, and, therefore, the constitutional provision, that the only way to revive or amend a law was to reenact and publish it at length and that no law should be revived or amended by reference to its title, was not violated.

(4) The objection that if the 1928 act was not null it had nullified the inspection statutes, particularly certain named ones, had reference to the question of wisdom or policy of the act, which question was for the legislature and not for the courts to consider.

(5) The office of president of the State board of health was a constitutional office in the sense only that the constitution commanded the legislature to create the office, but the term of office, not being fixed by the constitution, was subject to change at any session of the legislature.

(6) The 1928 act did not provide a proceeding for removal from office and, therefore, was not violative of article 9 of the constitution in that the purpose and effect of the statute was to remove the respondent from office by a method other than the methods prescribed in said article.

(7) The reduction, by the 1928 act, of the term of office of president of the State board of health from seven to four years was not a reduction of salary in violation of the constitutional requirement that changes in salaries of public officers shall be only by a two-thirds vote of the members of each house of the legislature.

An application for rehearing was refused, but in passing on such application the court stated that the 1928 act had the effect of removing respondent from office; that, if removed, his term of office had

expired; and that, if the term had expired, there was a vacancy which could be filled by the governor without the right of holdover by the respondent. The 1928 act having gone into effect during the recess of the senate, the question was presented as to whether the governor's failure to send the new appointee's name to the senate for confirmation at a special session following such recess was equivalent to a rejection or not, and regarding this matter the court concluded that, under the constitution, the governor was "compelled to have recess appointees confirmed by the senate only at regular or biennial sessions of the legislature, although, in his discretion, he may have such appointees confirmed at a special session."

DEATHS DURING WEEK ENDED MAY 4, 1929

Summary of information received by telegraph from industrial insurance companies for the week ended May 4, 1929, and corresponding week of 1928. (From the Weekly Health Index, May 8, 1929, issued by the Bureau of the Census, Department of Commerce)

	Week ended May 4, 1929	Corresponding week, 1928
Policies in force	73,770,016	71,133,242
Number of death claims	14,911	15,030
Death claims per 1,000 policies in force, annual rate	10.5	11.0

Deaths from all causes in certain large cities of the United States during the week ended May 4, 1929, infant mortality, annual death rate, and comparison with corresponding week of 1928

City	Week ended May 4, 1929		Annual death rate per 1,000, corresponding week, 1928	Deaths under 1 year		Infant mortality rate, week ended May 4, 1929 [2]
	Total deaths	Death rate [1]		Week ended May 4, 1929	Corresponding week, 1928	
Total (64 cities)	7,181	12.7	15.3	664	961	[3] 58
Akron	40			4	3	41
Albany [4]	44	19.1	23.5	2	3	40
Atlanta	86	17.6	20.5	8	12	83
White	47			4	6	
Colored	39	(5)	(5)	4	6	
Baltimore [4]	186	11.7	15.6	14	26	45
White	135			6	20	24
Colored	51	(5)	(5)	8	6	127
Birmingham	59	13.9	22.1	8	10	72
White	23			3	5	45
Colored	36	(5)	(5)	5	5	115
Boston	219	14.3	19.8	19	49	53
Bridgeport	23			6	7	104
Buffalo	140	13.2	14.0	14	17	60
Cambridge	25	10.4	16.6	2	7	36
Camden	31	12.0	15.4	3	10	62
Canton	20	9.0	12.5	3	3	71
Chicago [4]	736	12.2	14.6	75	87	67
Cincinnati	133			10	19	58
Cleveland	207	10.7	12.0	23	25	68
Columbus	82	14.3	18.2	10	11	94
Dallas	50	12.0	13.9	8	5	
White	41			7	5	
Colored	9	(5)	(5)	1	0	

For footnotes see end of table.

Deaths from all causes in certain large cities of the United States during the week ended May 4, 1929, infant mortality, annual death rate, and comparison with corresponding week of 1928—Continued

City	Week ended May 4, 1929		Annual death rate per 1,000, corresponding week, 1928	Deaths under 1 year		Infant mortality rate, week ended May 4, 1929
	Total deaths	Death rate		Week ended May 4, 1929	Corresponding week, 1928	
Denver	78	13.9	16.9	7	9	68
Des Moines	27	9.3	13.1	1	2	18
Detroit	353	13.4	13.9	47	64	76
Duluth	24	10.7	14.8	1	4	24
El Paso	29	12.9	21.7	0	6	----
Erie	25	----	----	4	2	82
Fall River [4]	34	13.2	13.2	6	4	113
Flint	41	14.4	13.7	7	11	85
Fort Worth	29	8.9	8.6	3	4	----
White	22	----	----	1	3	----
Colored	7	(5)	(5)	2	1	----
Grand Rapids	31	9.9	17.8	0	3	0
Houston	75	----	----	5	10	----
White	51	----	----	2	7	----
Colored	24	(5)	(5)	3	3	----
Indianapolis	108	14.8	14.9	6	4	48
White	94	----	----	4	3	37
Colored	14	(5)	(5)	2	1	119
Jersey City	71	11.4	19.3	9	15	70
Kansas City, Kans	21	9.3	11.9	2	3	44
White	15	----	----	2	2	50
Colored	6	(5)	(5)	0	1	0
Kansas City, Mo	102	13.6	13.4	10	13	84
Knoxville	16	7.9	13.9	0	3	0
White	14	----	----	0	3	0
Colored	2	(5)	(5)	0	0	0
Los Angeles	190	----	----	13	13	38
Louisville	79	12.5	14.6	3	7	24
White	58	----	----	1	6	9
Colored	21	(5)	(5)	2	1	126
Lowell	27	----	----	4	3	91
Lynn	20	9.9	11.9	1	4	27
Memphis	64	17.6	14.0	4	4	47
White	30	----	----	1	2	19
Colored	34	(5)	(5)	3	2	94
Milwaukee	112	10.8	16.0	20	22	88
Minneapolis	117	13.4	13.6	11	18	68
Nashville	40	15.0	18.7	5	5	81
White	30	----	----	3	5	65
Colored	10	(5)	(5)	2	0	126
New Bedford	24	----	----	2	5	43
New Haven	43	12.0	8.3	2	4	31
New Orleans	154	18.8	18.9	16	13	79
White	87	----	----	6	4	42
Colored	67	(5)	(5)	10	9	168
New York	1,483	12.9	16.9	135	223	55
Bronx Borough	198	10.9	13.3	11	24	33
Brooklyn Borough	496	11.2	15.2	47	84	48
Manhattan Borough	609	18.2	24.3	63	96	77
Queens Borough	133	8.1	10.8	11	18	45
Richmond Borough	47	16.3	12.8	3	1	54
Newark, N. J	121	13.4	10.4	12	14	63
Oakland	59	11.3	11.3	2	4	22
Oklahoma City	27	----	----	1	2	20
Omaha	60	14.1	13.8	3	5	35
Paterson	39	14.1	20.2	4	1	71
Philadelphia	454	11.5	15.3	35	67	50
Pittsburgh	164	12.7	16.8	25	31	86
Portland, Oreg	76	----	----	7	3	80
Providence	60	11.0	11.1	4	4	35
Richmond	48	12.9	17.5	4	4	56
White	28	----	----	2	1	42
Colored	20	(5)	(5)	2	3	82
Rochester	70	11.2	12.1	3	7	25
St. Louis	211	13.0	16.3	13	20	44
St. Paul	51	----	----	3	2	31
Salt Lake City [4]	34	12.9	12.1	6	3	92
San Antonio	77	18.5	17.7	12	16	----
San Diego	51	22.3	20.1	1	0	19
San Francisco	135	12.1	14.0	8	2	51
Schenectady	24	13.4	11.8	3	3	96

For footnotes see end of table.

Deaths from all causes in certain large cities of the United States during the week ended May 4, 1929, infant mortality, annual death rate, and comparison with corresponding week of 1928—Continued

City	Week ended May 4		Annual death rate per 1,000, corresponding week, 1928	Deaths under 1 year		Infant mortality rate, week ended May 4, 1929
	Total deaths	Death rate		Week ended May 4, 1929	Corresponding week, 1928	
Seattle	80	10.9	10.2	1	6	11
Somerville	23	11.7	11.7	3	3	108
Spokane	35	16.8	12.9	0	1	0
Springfield, Mass.	33	11.5	15.7	2	4	33
Syracuse	47	12.3	15.7	6	7	72
Toledo	78	13.0	15.2	7	10	65
Trenton	32	12.0	16.6	1	6	18
Utica	34	17.1	16.6	2	4	51
Washington, D. C.	139	13.2	13.1	11	13	64
White	88			4	6	34
Colored	51	(3)	(3)	7	7	133
Waterbury	18			1	7	25
Wilmington, Del.	29	11.8	17.9	6	5	156
Worcester	39	10.3	17.7	0	4	0
Yonkers	17	7.3	9.1	1	2	23
Youngstown	27	8.1	11.1	4	5	57

[1] Annual rate per 1,000 population.
[2] Deaths under 1 year per 1,000 births. Cities left blank are not in the registration area for births.
[3] Data for 71 cities.
[4] Deaths for week ended Friday.
[5] In the cities for which deaths are shown by color, the colored population in 1920 constituted the following percentages of the total population: Atlanta, 31; Baltimore, 15; Birmingham, 39; Dallas, 15; Fort Worth, 14; Houston, 25; Indianapolis, 11; Kansas City, Kans., 14; Knoxville, 15; Louisville, 17; Memphis, 38; Nashville, 30; New Orleans, 26; Richmond, 32; and Washington, D. C., 25.

PREVALENCE OF DISEASE

No health department, State or local, can effectively prevent or control disease without knowledge of when, where, and under what conditions cases are occurring

UNITED STATES

CURRENT WEEKLY STATE REPORTS

These reports are preliminary and the figures are subject to change when later returns are received by the State health officers

Reports for Weeks Ended May 4, 1929, and May 5, 1928

Cases of certain communicable diseases reported by telegraph by State health officers for weeks ended May 4, 1929, and May 5, 1928

Division and State	Diphtheria		Influenza		Measles		Meningococcus meningitis	
	Week ended May 4, 1929	Week ended May 5, 1928	Week ended May 4, 1929	Week ended May 5, 1928	Week ended May 4, 1929	Week ended May 5, 1928	Week ended May 4, 1929	Week ended May 5, 1928
New England States:								
Maine	3	3	----	5	125	52	0	0
New Hampshire	----	2	----	----	46	26	0	0
Vermont	----	----	----	----	6	25	0	0
Massachusetts	58	79	10	49	531	1,277	5	2
Rhode Island	8	6	----	1	100	296	0	0
Connecticut	14	23	6	85	376	370	0	2
Middle Atlantic States:								
New York	329	286	[1] 22	[1] 219	1,001	3,967	28	53
New Jersey	140	128	7	41	337	2,004	9	4
Pennsylvania	177	165	----	----	2,214	2,665	15	16
East North Central States:								
Ohio	49	67	23	115	1,962	930	19	9
Indiana	17	24	----	163	603	603	1	0
Illinois	199	83	16	136	2,082	244	15	17
Michigan	102	60	5	10	960	892	67	0
Wisconsin	13	23	20	1,257	1,535	82	3	2
West North Central States:								
Minnesota	16	12	1	77	698	93	4	7
Iowa	10	7	1	----	28	13	3	1
Missouri	35	34	32	69	206	400	15	11
North Dakota	5	----	----	259	119	21	4	1
South Dakota	3	1	----	13	32	45	1	1
Nebraska	15	9	1	42	50	55	3	1
Kansas	10	9	2	10	576	236	1	1
South Atlantic States:								
Delaware	3	----	----	----	13	30	0	0
Maryland [2]	21	32	11	15	29	856	1	0
District of Columbia	10	14	2	4	20	215	0	0
West Virginia	13	18	6	92	533	72	2	0
North Carolina	23	23	----	----	53	1,373	1	0
South Carolina	10	5	372	469	36	322	0	0
Georgia	7	5	20	78	38	367	0	0
Florida	9	9	----	3	71	142	0	1

[1] New York City only.

Cases of certain communicable diseases reported by telegraph by State health officers for weeks ended May 4, 1929, and May 5, 1928—Continued

Division and State	Diphtheria		Influenza		Measles		Meningococcus meningitis	
	Week ended May 4, 1929	Week ended May 5, 1928	Week ended May 4, 1929	Week ended May 5, 1928	Week ended May 4, 1929	Week ended May 5, 1928	Week ended May 4, 1929	Week ended May 5, 1928
East South Central States:								
Kentucky				14	29	268	1	0
Tennessee	6	8	40	256	63	228	2	0
Alabama	8	12	33	165	218	251	0	1
Mississippi	4	13					1	2
West South Central States:								
Arkansas	3	3	21	429	18	449	4	1
Louisiana	16	18	8	13	61	258	4	0
Oklahoma [1]	8	19		468	50	358	3	4
Texas	28	50	68	388	176	354	0	1
Mountain States:								
Montana	2	1			375	14	4	13
Idaho			4		4		6	2
Wyoming	3		1		39	22	0	0
Colorado	12	12			29	184	12	10
New Mexico	6	8	1	101	2	139	0	0
Arizona	1	7			1	9	4	3
Utah [2]	1	5	1	7	8	1	6	5
Pacific States:								
Washington	15	10			194	126	9	13
Oregon	7	7	22	21	278	71	3	0
California	55	95	26	34	101	120	24	4

Division and State	Poliomyelitis		Scarlet fever		Smallpox		Typhoid fever	
	Week ended May 4, 1929	Week ended May 5, 1928	Week ended May 4, 1929	Week ended May 5, 1928	Week ended May 4, 1929	Week ended May 5, 1928	Week ended May 4, 1929	Week ended May 5, 1928
New England States:								
Maine	0	0	15	28	1	0	3	1
New Hampshire	0	0	10	16	1	0	1	0
Vermont	0	0	9	9	5	0	0	2
Massachusetts	3	2	268	292	1	0	3	3
Rhode Island	0	0	21	33	0	0	0	0
Connecticut	0	0	50	66	0	5	2	1
Middle Atlantic States:								
New York	1	2	502	638	3	2	19	11
New Jersey	0	1	178	251	0	8	2	2
Pennsylvania	0	0	504	482	0	1	26	17
East North Central States:								
Ohio	2	0	216	306	88	60	10	5
Indiana	0	0	422	101	85	123	3	5
Illinois	1	1	407	279	65	61	9	9
Michigan	1	0	588	230	43	12	4	0
Wisconsin	0	1	154	179	5	5	1	4
West North Central States:								
Minnesota	2	1	120	121	0	12	2	1
Iowa	0	0	118	53	57	31	7	4
Missouri	0	0	72	100	37	52	6	4
North Dakota	0	0	20	30	7	3	1	0
South Dakota	0	0	26	36	12	8	1	0
Nebraska	0	0	126	118	92	41	0	1
Kansas	0	0	128	150	54	105	3	2
South Atlantic States:								
Delaware	0	0	4	0	0	0	0	1
Maryland [1]	0	0	65	70	0	0	7	4
District of Columbia	0	0	15	43	0	1	2	0
West Virginia	0	0	29	27	5	28	14	2
North Carolina	1	0	19	23	12	59	6	6
South Carolina	4	0	12	6	10	6	14	11
Georgia	0	0	13	12	0	0	6	3
Florida	4	1	7	4	1	0	3	11

[1] Week ended Friday.
[2] Figures for 1929 are exclusive of Oklahoma City and Tulsa.

Cases of certain communicable diseases reported by telegraph by State health officers for weeks ended May 4, 1929, and May 5, 1928—Continued

Division and State	Poliomyelitis		Scarlet fever		Smallpox		Typhoid fever	
	Week ended May 4, 1929	Week ended May 5, 1928	Week ended May 4, 1929	Week ended May 5, 1928	Week ended May 4, 1929	Week ended May 5, 1928	Week ended May 4, 1929	Week ended May 5, 1928
East South Central States:								
Kentucky	0	0	111	55	13	3	5	6
Tennessee	0	0	33	19	3	16	9	4
Alabama	0	0	12	10	3	11	9	4
Mississippi	1	0	21	9	0	9	5	2
West South Central States:								
Arkansas	0	0	23	18	2	8	1	0
Louisiana	0	0	52	8	7	11	5	18
Oklahoma [2]	1	0	19	81	62	98	0	3
Texas	0	3	71	101	51	99	3	7
Mountain States:								
Montana	0	0	24	47	13	26	0	1
Idaho	1	0	4	7	25	11	0	0
Wyoming	0	0	3	21	11	1	0	0
Colorado	0	0	39	109	16	10	1	1
New Mexico	0	0	7	25	1	4	0	0
Arizona	0	0	6	4	10	5	4	5
Utah [1]	0	0	12	2	9	14	0	0
Pacific States:								
Washington	0	0	38	43	57	35	6	4
Oregon	0	0	24	13	28	32	1	2
California	1	11	384	153	68	22	10	8

[1] Week ended Friday.
[2] Figures for 1929 are exclusive of Oklahoma City and Tulsa.

SUMMARY OF MONTHLY REPORTS FROM STATES

The following summary of monthly State reports is published weekly and covers only those States from which reports are received during the current week:

State	Meningococcus meningitis	Diphtheria	Influenza	Malaria	Measles	Pellagra	Poliomyelitis	Scarlet fever	Smallpox	Typhoid fever
January, 1929										
Georgia	5	50	24,070	208	219	22	0.	75	34	----
February, 1929										
Georgia	7	32	2,360	39	227	35	0	56	25	12
Hawaii Territory	20	47	124	----	18	----	----	10	----	4
March, 1929										
Georgia	17	33	738	213	191	21	1	77	57	29
Pennsylvania	72	702	----	----	8,711	1	3	2,116	6	56
South Dakota	11	25	11	----	189	----	1	125	68	1
April, 1929										
Connecticut	12	96	50	----	2,434	----	1	258	6	3
Nebraska	8	56	15	----	390	----	----	482	----	9
North Dakota	13	28	----	----	444	----	0	154	55	3
Porto Rico	----	71	32	958	591	1	2	----	0	70

January, 1929

Georgia:	Cases
Actinomycosis	1
Chicken pox	121
Conjunctivitis	3
Dysentery	7

Georgia—Continued	Cases
Hookworm	4
Mumps	20
Septic sore throat	47
Typhus fever	3
Whooping cough	47

February, 1929	Cases
Chicken pox:	
Georgia	53
Hawaii Territory	18
Conjunctivitis (follicular):	
Hawaii Territory	5
Dengue:	
Georgia	1
Dysentery:	
Georgia	5
Hookworm disease:	
Georgia	6
Hawaii Territory	13
Impetigo contagiosa:	
Hawaii Territory	1
Leprosy:	
Hawaii Territory	9
Lethargic encephalitis:	
Georgia	1
Mumps:	
Georgia	64
Hawaii Territory	14
Paratyphoid fever:	
Georgia	1
Septic sore throat:	
Georgia	42
Tetanus:	
Georgia	1
Hawaii Territory	3
Trachoma:	
Georgia	1
Hawaii Territory	58
Typhus fever:	
Georgia	6
Whooping cough:	
Georgia	42
Hawaii Territory	216

March, 1929	
Anthrax:	
Pennsylvania	1
Chicken pox:	
Georgia	98
Pennsylvania	2,338
South Dakota	38
Conjunctivitis:	
Georgia	1
Dysentery:	
Georgia	18
German measles:	
Pennsylvania	159
Lethargic encephalitis:	
Pennsylvania	8
Mumps:	
Georgia	91
Pennsylvania	2,260
South Dakota	19
Ophthalmia neonatorum:	
Pennsylvania	15
Paratyphoid fever:	
Georgia	1
Puerperal fever:	
Pennsylvania	2
Septic sore throat:	
Georgia	67
Trichinosis:	
Pennsylvania	6
Typhus fever:	
Georgia	1
Whooping cough:	
Georgia	281
Pennsylvania	1,715
South Dakota	11

April, 1929	
Anthrax:	
Connecticut	1
Porto Rico	2
Chicken pox:	
Connecticut	229
Nebraska	86
North Dakota	60
Colibacillosis:	
Porto Rico	5
Dysentery:	
Porto Rico	139
Filariasis:	
Porto Rico	7
German measles:	
Connecticut	643
Nebraska	5
Lead poisoning:	
Connecticut	1
Lethargic encephalitis:	
North Dakota	2
Mumps:	
Connecticut	380
Nebraska	206
North Dakota	20
Porto Rico	14
Ophthalmia neonatorum:	
Porto Rico	1
Puerperal fever:	
Porto Rico	18
Scabies:	
North Dakota	14
Septic sore throat:	
Connecticut	9
Nebraska	13
Tetanus:	
Connecticut	2
Porto Rico	19
Tetanus (infantile):	
Porto Rico	27
Trachoma:	
Connecticut	1
North Dakota	4
Porto Rico	2
Trichinosis:	
Connecticut	2
Undulant fever:	
Connecticut	1
Vincent's angina:	
North Dakota	20
Whooping cough:	
Connecticut	142
Nebraska	63
North Dakota	51
Porto Rico	45
Yaws:	
Porto Rico	1

GENERAL CURRENT SUMMARY AND WEEKLY REPORTS FROM CITIES

The 98 cities reporting cases used in the following table are situated in all parts of the country and have an estimated aggregate population of more than 31,565,000. The estimated population of the 91 cities reporting deaths is more than 29,995,000. The estimated expectancy is based on the experience of the last nine years, excluding epidemics.

Weeks ended April 27, 1929, and April 28, 1928

	1929	1928	Estimated expectancy
Cases reported			
Diphtheria:			
46 States	1,470	1,463	----
98 cities	825	773	848
Measles:			
45 States	14,668	18,986	----
98 cities	5,095	7,626	----
Meningococcus meningitis:			
45 States	274	132	----
98 cities	140	92	----
Poliomyelitis:			
46 States	27	20	----
Scarlet fever:			
46 States	4,496	4,182	----
98 cities	1,794	1,586	1,319
Smallpox:			
46 States	852	1,067	----
98 cities	76	150	90
Typhoid fever:			
46 States	206	155	----
98 cities	46	25	41
Deaths reported			
Influenza and pneumonia:			
91 cities	750	1,340	----
Smallpox:			
91 cities	0	0	----

City reports for week ended April 27, 1929

The estimated expectancy given for diphtheria, poliomyelitis, scarlet fever, smallpox, and typhoid fever is the result of an attempt to ascertain from previous occurrence the number of cases of the disease under consideration that may be expected to occur during a certain week in the absence of epidemics. It is based on reports to the Public Health Service during the past nine years. It is in most instances the median number of cases reported in the corresponding weeks of the preceding years. When the reports include several epidemics, or when for other reasons the median is unsatisfactory, the epidemic periods are excluded and the estimated expectancy is the mean number of cases reported for the week during non-epidemic years.

If the reports have not been received for the full nine years, data are used for as many years as possible, but no year earlier than 1920 is included. In obtaining the estimated expectancy the figures are smoothed when necessary to avoid abrupt deviation from the usual trend. For some of the diseases given in the table the available data were not sufficient to make it practicable to compute the estimated expectancy.

Division, State, and city	Population, July 1, 1928, estimated	Chicken pox, cases reported	Diphtheria		Influenza		Measles, cases reported	Mumps, cases reported	Pneumonia, deaths reported
			Cases, estimated expectancy	Cases reported	Cases reported	Deaths reported			
NEW ENGLAND									
Maine:									
Portland	78,600	4	0	1	----	0	15	3	2
New Hampshire:									
Concord	(1)	0	0	0	----	0	8	0	2
Manchester	85,700	0	0	7	----	1	0	0	0
Nashua	(1)	0	1	0	----	0	0	0	0

[1] No estimate of population made.

City reports for week ended April 27, 1929—Continued

Division, State, and city	Population, July 1, 1928, estimated	Chicken pox, cases reported	Diphtheria		Influenza		Measles, cases reported	Mumps, cases reported	Pneumonia, deaths reported
			Cases, estimated expectancy	Cases reported	Cases reported	Deaths reported			
NEW ENGLAND—con.									
Vermont:									
Barre	(1)	0	1	0	-------	0	0	0	0
Burlington	(1)	1	1	1	-------	0	1	2	0
Massachusetts:									
Boston	799,200	45	33	33	8	2	29	40	30
Fall River	134,300	0	3	1	-------	0	5	0	5
Springfield	149,800	10	2	2	-------	0	0	1	2
Worcester	197,600	24	4	0	2	0	24	6	2
Rhode Island:									
Pawtucket	73,100	3	1	0	-------	0	15	0	2
Providence	286,300	0	8	6	-------	0	100	0	5
Connecticut:									
Bridgeport	(1)	1	5	1	-------	0	15	1	4
Hartford	172,300	5	5	3	1	0	36	14	4
New Haven	187,000	22	1	2	-------	1	3	0	6
MIDDLE ATLANTIC									
New York:									
Buffalo	555,800	3	10	7	-------	1	75	0	20
New York	6,017,500	221	256	296	14	11	74	156	148
Rochester	328,200	14	9	7	-------	1	28	10	9
Syracuse	199,300	35	5	0	-------	1	1	12	4
New Jersey:									
Camden	135,400	6	7	13	-------	0	6	3	4
Newark	473,600	52	14	43	2	0	8	30	9
Trenton	139,000	2	3	1	-------	1	8	0	5
Pennsylvania:									
Philadelphia	2,064,200	107	63	20	3	3	56	24	44
Pittsburgh	673,800	35	17	8	3	6	46	4	22
Reading	115,400	1	2	8	-------	0	15	0	4
EAST NORTH CENTRAL									
Ohio:									
Cincinnati	413,700	4	7	5	-------	1	1	0	5
Cleveland	1,010,200	63	25	13	4	0	492	3	8
Columbus	299,000	6	3	3	1	2	24	2	4
Toledo	313,200	3	4	3	1	1	71	7	7
Indiana:									
Fort Wayne	105,300	8	3	1	-------	0	20	0	1
Indianapolis	282,100	26	4	1	-------	1	183	2	12
South Bend	86,100	1	1	2	-------	0	9	0	1
Terre Haute	73,500	0	1	0	-------	0	16	0	1
Illinois:									
Chicago	3,157,400	95	65	139	7	3	1,204	11	64
Springfield	67,200	4	0	0	-------	0	7	0	1
Michigan:									
Detroit	1,378,900	80	45	53	4	1	66	35	37
Flint	148,800	14	3	3	-------	1	14	1	3
Grand Rapids	164,200	4	3	1	1	0	90	1	0
Wisconsin:									
Kenosha	50,500	5	0	0	-------	0	44	2	0
Milwaukee	544,200	46	12	3	1	1	855	15	15
Racine	74,400	7	3	0	-------	0	52	0	2
Superior	(1)	1	0	0	-------	0	1	0	1
WEST NORTH CENTRAL									
Minnesota:									
Duluth	116,800	9	0	1	-------	1	3	39	1
Minneapolis	455,900	48	14	9	-------	1	213	74	9
St. Paul	(1)	6	10	0	-------	1	317	26	10
Iowa:									
Davenport	(1)	0	1	0	-------	-------	2	0	-------
Des Moines	151,900	3	1	0	-------	-------	1	2	-------
Sioux City	80,000	11	1	0	-------	-------	6	0	-------
Waterloo	37,100	4	0	0	-------	-------	1	24	-------
Missouri:									
Kansas City	391,000	9	5	6	-------	0	127	0	5
St. Joseph	78,500	1	1	0	-------	0	17	0	4
St. Louis	848,100	21	39	22	3	-------	15	9	-------

[1] No estimate of population made.

City reports for week ended April 27, 1929—Continued

Division, State, and city	Population, July 1, 1928, estimated	Chicken pox, cases reported	Diphtheria		Influenza		Measles, cases reported	Mumps, cases reported	Pneumonia, deaths reported
			Cases, estimated expectancy	Cases reported	Cases reported	Deaths reported			
WEST NORTH CENTRAL—continued									
North Dakota:									
Fargo	(1)	0	0	0	-------	0	63	0	0
Grand Forks	(1)	0	0	0	-------	-------	0	0	-------
South Dakota:									
Aberdeen	(1)	3	0	0	-------	-------	0	0	-------
Sioux Falls	(1)	1	0	0	-------	-------	1	0	-------
Nebraska:									
Omaha	222,800	4	2	5	-------	0	38	0	3
Kansas:									
Topeka	62,800	12	1	0	-------	0	46	1	2
Wichita	99,300	1	1	1	-------	1	44	32	3
SOUTH ATLANTIC									
Delaware:									
Wilmington	128,500	1	2	2	-------	0	5	0	4
Maryland:									
Baltimore	830,400	43	24	10	9	2	5	146	29
Cumberland	(1)	0	1	0	-------	0	0	1	0
Frederick	(1)	0	0	0	-------	0	0	0	1
District of Columbia:									
Washington	552,000	25	12	9	2	2	13	0	17
Virginia:									
Lynchburg	38,600	7	1	1	-------	0	0	68	0
Norfolk	184,200	18	0	1	-------	1	2	32	3
Richmond	194,400	2	2	2	-------	1	2	2	2
Roanoke	64,600	0	1	0	-------	0	0	2	0
West Virginia:									
Charleston	55,200	20	0	0	2	0	122	0	0
Wheeling	(1)	0	2	0	-------	0	127	0	2
North Carolina:									
Raleigh	(1)	10	0	0	-------	0	0	0	2
Wilmington	39,100	11	0	2	-------	0	0	0	0
Winston-Salem	80,000	7	1	0	-------	0	1	0	2
South Carolina:									
Charleston	75,900	2	0	0	17	0	0	0	0
Columbia	50,600	3	0	0	-------	0	1	2	0
Greenville	(1)	1	0	0	-------	0	0	3	0
Georgia:									
Atlanta	255,100	2	2	2	7	2	8	3	7
Brunswick	(1)	0	0	0	-------	0	0	0	0
Savannah	99,900	0	0	0	2	0	0	0	2
Florida:									
Miami	156,700	0	2	1	-------	0	31	1	1
St. Petersburg	53,300	-------	0	-------	-------	0	-------	-------	0
Tampa	113,400	10	1	3	-------	0	2	0	0
EAST SOUTH CENTRAL									
Kentucky:									
Covington	59,000	0	1	0	-------	1	0	0	2
Tennessee:									
Memphis	190,200	2	2	3	-------	1	1	0	6
Nashville	139,600	2	1	0	-------	2	0	0	4
Alabama:									
Birmingham	222,400	7	1	2	3	0	1	5	0
Mobile	69,600	1	1	1	2	0	1	1	1
Montgomery	63,100	4	0	2	-------	-------	0	0	-------
WEST SOUTH CENTRAL									
Arkansas:									
Fort Smith	(1)	1	0	2	-------	-------	0	0	-------
Little Rock	79,200	0	0	0	-------	1	0	2	1
Louisiana:									
New Orleans	429,400	1	7	10	4	3	6	0	6
Shreveport	81,300	2	0	0	-------	2	3	0	0
Oklahoma:									
Tulsa	170,500	20	1	1	-------	-------	10	1	-------

[1] No estimate of population made.

City reports for week ended April 27, 1929—Continued

Division, State, and city	Population, July 1, 1925, estimated	Chicken pox, cases reported	Diphtheria		Influenza		Measles, cases reported	Mumps, cases reported	Pneumonia, deaths reported
			Cases, estimated expectancy	Cases reported	Cases reported	Deaths reported			
WEST SOUTH CENTRAL—continued									
Texas:									
Dallas	217,800	4	3	8	1	2	52	1	4
Fort Worth	170,600	2	1	1	-------	3	4	2	4
Galveston	50,600	0	0	0	-------	0	0	0	2
Houston	(1)	0	2	12	-------	0	11	0	4
San Antonio	218,100	0	1	1	-------	3	1	0	6
MOUNTAIN									
Montana:									
Billings	(1)	10	0	0	-------	0	0	0	0
Great Falls	(1)	12	0	0	-------	0	24	1	0
Helena	(1)	0	0	0	-------	0	6	0	1
Missoula	(1)	0	1	0	-------	0	0	0	1
Idaho:									
Boise	(1)	0	0	0	-------	0	0	0	0
Colorado:									
Denver	294,200	55	11	7	4	3	5	43	3
Pueblo	44,200	32	1	0	-------	0	2	1	1
New Mexico:									
Albuquerque	(1)	13	0	0	-------	0	0	0	0
Utah:									
Salt Lake City	138,000	10	3	2	-------	3	5	99	3
Nevada:									
Reno	(1)	0	0	0	-------	0	0	0	1
PACIFIC									
Washington:									
Seattle	383,200	45	3	0	-------	-------	2	21	-------
Spokane	109,100	24	2	1	-------	-------	120	0	-------
Tacoma	110,500	10	1	1	-------	0	1	6	5
Oregon:									
Portland	(1)	11	6	3	2	2	81	9	6
Salem	(1)	1	0	0	1	0	-------	2	0
California:									
Los Angeles	(1)	93	39	7	23	2	24	30	25
Sacramento	75,700	12	2	1	2	1	6	11	4
San Francisco	585,300	17	19	14	4	1	3	23	4

Division, State, and city	Scarlet fever		Smallpox			Tuberculosis, deaths reported	Typhoid fever			Whooping cough, cases reported	Deaths, all causes
	Cases, estimated expectancy	Cases reported	Cases, estimated expectancy	Cases reported	Deaths reported		Cases, estimated expectancy	Cases reported	Deaths reported		
NEW ENGLAND											
Maine:											
Portland	2	9	0	0	0	0	0	0	0	0	23
New Hampshire:											
Concord	0	4	0	0	0	0	0	0	0	0	12
Manchester	3	0	0	0	0	1	0	0	0	0	20
Nashua	1	0	0	0	0	0	0	0	0	0	11
Vermont:											
Barre	1	0	0	0	0	1	0	0	0	7	4
Burlington	0	3	0	1	0	0	0	0	0	1	-------
Massachusetts:											
Boston	68	70	0	0	0	15	1	2	0	39	203
Fall River	4	3	0	0	0	4	1	0	0	4	28
Springfield	7	12	0	0	0	3	0	0	0	3	22
Worcester	9	3	0	0	0	4	0	0	0	27	34
Rhode Island:											
Pawtucket	1	6	0	0	0	1	0	0	0	0	13
Providence	10	12	0	0	0	2	0	0	0	3	31

[1] No estimate of population made.

City reports for week ended April 27, 1929—Continued

Division, State, and city	Scarlet fever		Smallpox			Tuberculosis, deaths reported	Typhoid fever			Whooping cough, cases reported	Deaths, all causes
	Cases, estimated expectancy	Cases reported	Cases, estimated expectancy	Cases reported	Deaths reported		Cases, estimated expectancy	Cases reported	Deaths reported		
NEW ENGLAND—continued											
Connecticut:											
Bridgeport	11	2	0	0	0	2	0	0	0	0	33
Hartford	5	7	0	0	0	0	1	0	0	0	32
New Haven	9	2	0	0	0	0	1	0	0	3	55
MIDDLE ATLANTIC											
New York:											
Buffalo	23	38	0	0	0	15	1	0	0	26	166
New York	296	297	0	0	0	103	9	1	1	62	1,543
Rochester	14	3	0	0	0	2	0	0	0	22	84
Syracuse	11	9	0	0	0	0	0	1	0	20	48
New Jersey:											
Camden	6	3	0	0	0	3	0	0	0	1	28
Newark	30	32	0	0	0	11	1	0	0	30	136
Trenton	4	5	0	0	0	2	0	0	0	3	46
Pennsylvania:											
Philadelphia	93	84	0	0	0	43	3	4	0	49	509
Pittsburgh	30	21	0	0	0	9	1	1	1	46	162
Reading	3	17	0	0	0	1	0	1	0	2	29
EAST NORTH CENTRAL											
Ohio:											
Cincinnati	21	74	1	7	0	12	1	0	0	11	129
Cleveland	39	28	0	0	0	12	0	0	0	49	180
Columbus	9	4	2	0	0	11	0	0	0	49	87
Toledo	14	3	1	0	0	11	0	0	0	60	91
Indiana:											
Fort Wayne	6	3	2	1	0	0	0	0	0	2	20
Indianapolis	11	90	11	0	0	6	0	0	0	50	106
South Bend	4	2	1	0	0	0	0	0	0	0	9
Terre Haute	3	2	1	0	0	1	0	1	0	1	18
Illinois:											
Chicago	117	199	2	0	0	71	2	1	0	54	758
Springfield	4	7	0	1	0	1	0	0	0	2	25
Michigan:											
Detroit	95	226	1	3	0	20	2	3	0	130	341
Flint	7	36	1	9	0	1	1	1	0	2	30
Grand Rapids	6	4	1	4	0	0	0	0	1	33	34
Wisconsin:											
Kenosha	2	2	0	0	0	1	0	0	0	8	6
Milwaukee	30	23	2	1	0	5	0	0	0	119	111
Racine	5	6	0	0	0	0	0	0	0	4	15
Superior	3	1	0	0	0	2	1	0	0	6	13
WEST NORTH CENTRAL											
Minnesota:											
Duluth	8	7	0	0	0	5	0	0	0	4	19
Minneapolis	46	16	3	0	0	3	1	0	0	85	107
St. Paul	27	15	0	0	0	4	0	0	0	47	72
Iowa:											
Davenport	2	3	2	6	-------	-------	0	0	-------	0	-------
Des Moines	5	22	2	1	-------	-------	0	0	-------	0	30
Sioux City	2	1	1	0	-------	-------	0	0	-------	3	-------
Waterloo	1	24	0	6	-------	-------	0	5	1	1	-------
Missouri:											
Kansas City	14	31	3	0	0	8	1	0	0	21	107
St. Joseph	3	1	0	0	0	0	0	0	0	2	31
St. Louis	34	18	3	0	0	14	1	1	1	79	230
North Dakota:											
Fargo	2	1	0	0	0	0	0	0	0	7	9
Grand Forks	1	1	0	15	-------	-------	0	0	-------	0	-------
South Dakota:											
Aberdeen	1	0	0	0	-------	-------	0	0	-------	2	-------
Sioux Falls	2	0	1	4	-------	-------	0	0	-------	0	0
Nebraska:											
Omaha	3	2	4	0	0	2	0	0	0	2	44
Kansas:											
Topeka	3	1	1	0	0	0	0	0	0	8	9
Wichita	3	29	1	1	0	2	0	0	0	20	36

City reports for week ended April 27, 1929—Continued

Division, State, and city	Scarlet fever		Smallpox			Tuberculosis, deaths reported	Typhoid fever			Whooping cough, cases reported	Deaths, all causes
	Cases, estimated expectancy	Cases reported	Cases, estimated expectancy	Cases reported	Deaths reported		Cases, estimated expectancy	Cases reported	Deaths reported		
SOUTH ATLANTIC											
Delaware:											
Wilmington	6	1	0	0	0	0	0	0	0	1	28
Maryland:											
Baltimore	31	27	0	0	0	16	2	1	1	103	212
Cumberland	0	1	0	0	0	0	0	0	0	0	5
Frederick	2	0	0	0	0	0	0	0	0	0	3
District of Columbia:											
Washington	24	15	1	0	0	9	0	1	1	30	132
Virginia:											
Lynchburg	0	0	0	0	0	0	0	0	0	6	10
Norfolk	2	0	0	0	0	1	0	0	0	22	-------
Richmond	3	1	0	0	0	1	0	0	0	3	43
Roanoke	0	1	1	0	0	1	0	0	0	0	15
West Virginia:											
Charleston	1	0	1	0	0	0	0	2	0	8	16
Wheeling	2	0	0	0	0	2	0	1	0	0	16
North Carolina:											
Raleigh	1	0	1	0	0	2	0	0	0	11	16
Wilmington	0	1	0	1	0	0	0	0	0	0	15
Winston-Salem	0	0	2	0	0	1	0	0	0	35	18
South Carolina:											
Charleston	0	2	0	0	0	2	0	1	0	0	22
Columbia	0	1	0	0	0	0	0	0	1	0	19
Greenville	0	0	0	0	0	0	0	1	0	8	9
Georgia:											
Atlanta	4	2	3	0	0	7	1	0	0	10	50
Brunswick	0	0	0	0	0	0	0	0	0	0	7
Savannah	1	0	1	0	0	1	0	1	0	6	33
Florida:											
Miami	0	0	1	0	0	1	0	0	0	24	24
St. Petersburg	0	-------	0	-------	0	0	0	-------	0	-------	14
Tampa	0	0	0	0	0	0	1	2	0	5	12
EAST SOUTH CENTRAL											
Kentucky:											
Covington	2	4	0	0	0	1	0	0	0	0	19
Tennessee:											
Memphis	5	3	3	0	0	7	1	2	0	3	82
Nashville	1	3	1	0	0	5	0	1	0	6	43
Alabama:											
Birmingham	2	2	7	0	0	7	0	0	0	12	60
Mobile	0	1	0	0	0	1	0	0	0	4	23
Montgomery	1	3	0	0	-------	-------	0	0	-------	0	-------
WEST SOUTH CENTRAL											
Arkansas:											
Fort Smith	0	1	0	0	-------	-------	0	0	-------	0	-------
Little Rock	0	2	0	0	0	2	0	1	0	0	-------
Louisiana:											
New Orleans	6	40	0	0	0	15	2	5	2	1	137
Shreveport	1	0	0	0	0	2	1	1	0	2	22
Oklahoma:											
Tulsa	1	0	2	8	-------	-------	0	1	-------	11	-------
Texas:											
Dallas	3	8	2	4	0	1	0	2	1	2	47
Fort Worth	1	1	5	3	0	3	0	0	0	1	37
Galveston	0	0	0	0	0	3	0	0	0	0	13
Houston	1	4	1	1	0	3	0	0	0	3	51
San Antonio	1	2	0	1	0	7	1	0	0	0	70
MOUNTAIN											
Montana:											
Billings	0	0	0	0	0	0	0	0	0	0	5
Great Falls	1	0	1	0	0	0	0	0	0	9	12
Helena	2	0	0	0	0	0	0	0	0	0	6
Missoula	1	0	0	0	0	0	0	0	0	0	3
Idaho:											
Boise	1	2	0	0	0	0	0	0	0	0	5

City reports for week ended April 27, 1929—Continued

Division, State, and city	Scarlet fever		Smallpox			Tuberculosis, deaths reported	Typhoid fever			Whooping cough, cases reported	Deaths, all causes
	Cases, estimated expectancy	Cases reported	Cases, estimated expectancy	Cases reported	Deaths reported		Cases, estimated expectancy	Cases reported	Deaths reported		
MOUNTAIN—con.											
Colorado:											
Denver	12	8	2	0	0	5	0	0	0	16	65
Pueblo	1	0	0	0	0	0	1	0	0	0	7
New Mexico:											
Albuquerque	0	2	0	0	0	4	0	0	0	15	10
Utah:											
Salt Lake City	2	3	2	3	0	2	0	0	0	13	41
Nevada:											
Reno	0	1	0	0	0	0	0	0	0	0	2
PACIFIC											
Washington:											
Seattle	8	6	3	3	----	----	0	1	----	86	----
Spokane	4	1	7	0	----	----	0	0	----	15	----
Tacoma	2	1	3	15	0	0	0	0	0	1	31
Oregon:											
Portland	5	4	7	15	0	6	1	0	0	0	68
Salem	0	0	1	5	0	0	0	0	0	0	----
California:											
Los Angeles	24	52	5	10	0	26	1	2	1	20	257
Sacramento	1	21	1	2	0	2	1	0	0	15	33
San Francisco	17	82	1	3	0	8	0	0	0	41	144

Division, State, and city	Meningococcus meningitis		Lethargic encephalitis		Pellagra		Poliomyelitis (infantile paralysis)		
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases, estimated expectancy	Cases	Deaths
NEW ENGLAND									
Massachusetts:									
Boston	3	1	0	0	0	0	1	0	0
Worcester	2	0	0	0	0	0	0	0	0
Connecticut:									
Bridgeport	1	0	0	0	0	0	0	0	0
MIDDLE ATLANTIC									
New York:									
Buffalo	0	1	0	0	0	0	0	0	
New York	18	10	5	1	0	0	1	0	0
Syracuse	1	0	0	0	0	0	0	0	0
New Jersey:									
Newark	2	0	0	0	0	0	0	0	0
Pennsylvania:									
Philadelphia	2	2	0	0	0	0	0	0	0
Pittsburgh	1	1	0	2	0	0	0	0	0
EAST NORTH CENTRAL									
Ohio:									
Cleveland	3	2	0	0	0	0	0	0	0
Columbus	3	1	1	1	0	0	0	0	0
Toledo	1	2	0	0	0	0	0	0	0
Indiana:									
Indianapolis	0	3	0	0	0	0	0	0	0
Illinois:									
Chicago	8	6	1	0	2	2	1	1	0
Michigan:									
Detroit	33	17	2	0	0	0	0	0	0
Flint	8	3	0	0	0	0	0	0	0
Wisconsin:									
Milwaukee	0	0	1	1	0	0	1	0	0

City reports for week ended April 27, 1929—Continued

Division, State, and city	Cerebrospinal meningitis		Lethargic encephalitis		Pellagra		Poliomyelitis (infantile paralysis)		
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases, estimated expectancy	Cases	Deaths
WEST NORTH CENTRAL									
Minnesota:									
Duluth	1	1	0	0	0	0	0	0	0
Minneapolis	0	0	0	1	0	0	0	1	0
St. Paul	1	0	0	0	0	0	0	0	0
Iowa:									
Sioux City	[1]1	0	0	0	0	0	0	0	0
Missouri:									
Kansas City	5	1	0	0	0	0	0	0	0
St. Joseph	1	2	0	0	0	0	0	0	0
St. Louis	3	4	0	0	0	0	0	0	0
Nebraska:									
Omaha	2	0	0	0	0	0	0	0	0
SOUTH ATLANTIC									
Maryland:									
Baltimore	1	0	0	0	0	0	1	0	0
North Carolina:									
Raleigh	0	0	0	0	0	1	0	0	0
Winston-Salem	0	0	0	0	1	0	0	0	0
South Carolina:									
Charleston	0	0	0	0	2	1	0	0	0
Columbia	0	0	0	0	0	1	0	0	0
Georgia:									
Atlanta	1	0	0	0	0	0	0	0	0
Brunswick	0	0	0	0	0	1	0	0	0
Savannah [2]	0	0	1	0	4	0	0	0	0
Florida:									
Miami	0	0	0	0	0	0	0	1	0
EAST SOUTH CENTRAL									
Tennessee:									
Memphis	2	3	1	1	0	0	0	0	0
Alabama:									
Birmingham	0	0	0	0	1	1	0	0	0
Mobile	0	0	0	1	0	0	0	0	0
Montgomery	0	0	0	0	2	0	0	0	0
WEST SOUTH CENTRAL									
Arkansas:									
Little Rock	0	0	0	0	0	1	0	0	0
Louisiana:									
New Orleans	2	1	0	0	1	2	0	0	0
Texas:									
Fort Worth	0	0	0	0	0	1	0	0	0
Galveston	0	0	0	0	0	2	0	0	0
MOUNTAIN									
Montana:									
Great Falls	4	1	0	0	0	0	0	0	0
Missoula	2	1	0	0	0	0	0	0	0
Colorado:									
Denver	4	4	0	0	0	0	0	0	0
Pueblo	1	0	0	0	0	0	0	0	0
Utah:									
Salt Lake City	7	4	0	0	0	0	0	0	0
PACIFIC									
Washington:									
Seattle	7	0	0	0	0	0	0	0	0
Oregon:									
Portland	0	0	1	0	0	0	0	0	0
California:									
Los Angeles	3	2	0	0	2	1	1	0	1
Sacramento	3	1	0	0	0	0	0	0	0
San Francisco	4	0	0	2	0	0	0	0	0

[1] Nonresident.
[2] Typhus fever; 1 case at Savannah, Ga.

The following table gives the rates per 100,000 population for 98 cities for the 5-week period ended April 27, 1929, compared with those for a like period ended April 28, 1928. The population figures used in computing the rates are approximate estimates, authoritative figures for many of the cities not being available. The 98 cities reporting cases have estimated aggregate populations of more than 31,000,000. The 91 cities reporting deaths have nearly 30,000,000 estimated population. The number of cities included in each group and the estimated aggregate populations are shown in a separate table below.

Summary of weekly reports from cities, March 24 to April 27, 1929—Annual rates per 100,000 population, compared with rates for the corresponding period of 1928 [1]

DIPHTHERIA CASE RATES

	Week ended—									
	Mar. 30, 1929	Mar. 31, 1928	Apr. 6, 1929	Apr. 7, 1928	Apr. 13, 1929	Apr. 14, 1928	Apr. 20, 1929	Apr. 21, 1928	Apr. 27, 1929	Apr. 28, 1928
98 cities	129	140	131	135	124	146	135	139	136	130
New England	102	110	136	126	118	168	143	131	111	133
Middle Atlantic	187	181	190	189	166	210	198	204	194	172
East North Central	119	146	125	121	126	116	122	116	143	131
West North Central	138	84	75	102	83	102	112	80	85	84
South Atlantic	66	128	82	96	71	90	66	88	58	94
East South Central	41	70	27	35	75	42	7	42	54	56
West South Central	123	109	119	134	126	162	103	126	130	101
Mountain	44	115	44	44	61	133	70	80	78	133
Pacific	30	74	60	77	67	74	60	102	60	56

MEASLES CASE RATES

98 cities	719	1,375	842	1,275	827	1,336	900	1,361	842	1,284
New England	471	2,014	525	1,874	642	1,727	502	1,743	586	1,593
Middle Atlantic	154	1,495	174	1,508	160	1,744	146	1,829	153	1,868
East North Central	1,590	1,021	1,834	1,033	1,943	997	2,025	816	1,962	727
West North Central	1,782	751	1,961	765	1,655	864	2,123	990	1,711	1,021
South Atlantic	414	3,008	650	2,586	465	2,173	761	2,455	536	1,810
East South Central	88	1,354	88	596	129	814	54	1,480	20	1,297
West South Central	99	847	257	442	241	434	182	385	289	401
Mountain	409	753	618	709	192	744	209	762	366	842
Pacific	239	581	282	448	329	525	389	394	389	386

SCARLET FEVER CASE RATES

98 cities	319	303	291	276	271	223	269	252	296	267
New England	394	405	344	331	319	301	244	264	294	329
Middle Atlantic	264	399	244	367	224	274	224	288	246	313
East North Central	482	366	426	252	372	193	417	271	451	281
West North Central	310	258	275	264	242	278	215	289	281	276
South Atlantic	167	230	94	186	122	161	90	168	97	222
East South Central	265	77	210	91	183	42	143	112	109	161
West South Central	285	148	281	150	237	130	233	166	225	109
Mountain	78	186	104	229	165	239	70	213	122	204
Pacific	322	207	324	133	387	123	384	151	407	110

SMALLPOX CASE RATES

98 cities	16	25	11	18	12	20	9	22	13	25
New England	11	0	2	0	2	0	0	0	0	0
Middle Atlantic	0	0	0	0	0	0	0	0	0	0
East North Central	17	24	15	24	20	24	11	31	17	28
West North Central	25	65	17	84	8	49	10	61	13	68
South Atlantic	13	75	4	15	4	11	2	11	2	33
East South Central	41	35	7	14	7	28	0	21	0	98
West South Central	95	36	79	4	79	16	12	8	24	28
Mountain	44	142	26	106	78	151	44	168	26	151
Pacific	22	23	17	18	10	74	62	59	82	43

[1] The figures given in this table are rates per 100,000 population, annual basis, and not the number of cases reported. Populations used are estimated as of July 1, 1929 and 1928, respectively.

Summary of weekly reports from cities, March 24 to April 27, 1929—Annual rates per 100,000 population, compared with rates for the corresponding period of 1928—Continued

TYPHOID FEVER CASE RATES

	Week ended—									
	Mar. 30, 1929	Mar. 31, 1928	Apr. 6, 1929	Apr. 7, 1928	Apr. 13, 1929	Apr. 14, 1928	Apr. 20, 1929	Apr. 21, 1928	Apr. 27, 1929	Apr. 28, 1928
98 cities	10	6	5	5	12	5	10	6	8	4
New England	5	5	5	2	9	9	7	7	5	5
Middle Atlantic	5	4	2	1	7	5	8	6	4	3
East North Central	17	2	7	3	11	1	4	3	4	2
West North Central	8	2	4	6	25	8	10	6	12	6
South Atlantic	13	23	4	13	13	4	24	10	17	6
East South Central	27	14	7	21	20	21	7	21	20	7
West South Central	20	12	8	16	43	20	43	20	36	24
Mountain	0	0	0	0	0	0	0	0	0	0
Pacific	0	3	7	8	7	3	10	3	7	0

INFLUENZA DEATH RATES

91 cities	18	30	20	35	15	31	15	29	13	33
New England	5	11	11	16	7	9	9	7	7	14
Middle Atlantic	12	29	16	31	14	27	11	26	12	34
East North Central	16	24	18	40	15	27	14	28	6	35
West North Central	18	28	27	24	6	37	18	61	12	46
South Atlantic	22	23	17	21	17	33	21	17	13	33
East South Central	89	115	74	92	30	123	15	92	30	54
West South Central	37	87	49	108	32	92	53	46	45	37
Mountain	52	53	44	80	17	53	9	53	52	44
Pacific	16	13	20	7	23	13	13	13	13	17

PNEUMONIA DEATH RATES

91 cities	158	225	102	218	139	213	127	204	118	204
New England	172	225	102	179	127	177	115	166	145	138
Middle Atlantic	180	265	178	244	161	243	134	243	130	246
East North Central	132	206	134	240	126	199	119	191	99	214
West North Central	150	196	147	184	114	263	108	233	111	135
South Atlantic	159	239	144	187	165	212	146	187	127	178
East South Central	170	161	141	283	163	176	155	238	96	222
West South Central	130	246	142	187	93	241	81	200	93	191
Mountain	131	106	122	97	113	186	122	106	87	106
Pacific	157	118	131	104	98	88	157	81	125	125

Number of cities included in summary of weekly reports, and aggregate population of cities of each group, approximated as of July 1, 1929 and 1928, respectively

Group of cities	Number of cities reporting cases	Number of cities reporting deaths	Aggregate population of cities reporting cases.		Aggregate population of cities reporting deaths.	
			1929	1928	1929	1928
Total	98	91	31, 568, 400	31, 052, 700	29, 995, 100	29, 498, 600
New England	12	12	2, 305, 100	2, 273, 900	2, 305, 100	2, 273, 900
Middle Atlantic	10	10	10, 809, 700	10, 702, 200	10, 809, 700	10, 702, 200
East North Central	16	16	8, 181, 900	8, 001, 300	8, 181, 900	8, 001, 300
West North Central	12	9	2, 712, 100	2, 673, 300	1, 736, 900	1, 708, 100
South Atlantic	19	19	2, 783, 200	2, 732, 900	2, 783, 200	2, 732, 900
East South Central	6	5	767, 900	745, 500	704, 200	682, 400
West South Central	8	7	1, 319, 100	1, 289, 900	1, 285, 000	1, 256, 400
Mountain	9	9	598, 800	590, 200	598, 800	590, 200
Pacific	6	4	2, 090, 600	2, 043, 500	1, 590, 300	1, 551, 200

FOREIGN AND INSULAR

CANADA

Provinces—Communicable diseases—Week ended April 20, 1929.—The Department of Pensions and National Health reports cases of certain communicable diseases from eight provinces of Canada for the week ended April 20, 1929, as follows:

Disease	Nova Scotia	New Brunswick	Quebec	Ontario	Manitoba	Saskatchewan	Alberta	British Columbia	Total
Cerebrospinal fever					2	2	3		7
Influenza			54	23		18			95
Smallpox			8	37		9	5	19	78
Typhoid fever			20	7	6		4		37

Ontario—Communicable diseases—Comparative—Four weeks ended April 27, 1929.—The following table shows the number of certain communicable diseases reported in the Province of Ontario, Canada, for the four weeks ended April 27, 1929, as compared with the corresponding period of 1928:

Disease	1929		1928	
	Cases	Deaths	Cases	Deaths
Cerebrospinal meningitis	13	1	2	2
Chicken pox	593		541	
Conjunctivitis	4		5	
Diphtheria	212	13	207	8
Dysentery	1			
Erysipelas			3	
German measles	18		32	
Goiter	4	1	1	
Influenza	153	16		12
Lethargic encephalitis	2			1
Measles	2,387	1	2,021	
Mumps	758		2,570	
Paratyphoid fever	1			
Pneumonia		147		183
Poliomyelitis			3	
Puerperal septicemia		2		
Scarlet fever	455	4	437	2
Septic sore throat	21		12	
Smallpox	83		51	
Syphilis	216		184	
Tuberculosis	116	51	119	66
Typhoid fever	85	2	19	3
Whooping cough	621	4	263	9

Quebec Province—Communicable diseases—Week ended April 27, 1929.—During the week ended April 27, 1929, cases of communicable diseases were reported from the Province of Quebec as follows:

Disease	Cases	Disease	Cases
Cerebrospinal meningitis	4	Mumps	36
Chicken pox	35	Scarlet fever	106
Diphtheria	56	Smallpox	9
German measles	11	Tuberculosis	45
Influenza	5	Typhoid fever	20
Measles	96	Whooping cough	11

CHINA

Meningitis.—During the week ended April 27, 1929, 9 cases of meningitis, with 9 deaths, occurred at Canton, China. During the same week 2 cases of meningitis and 1 death were reported at Hong Kong. During the week ended May 4, there were 30 admissions to the hospital in Shanghai, and 30 deaths from meningitis.

ITALY

Communicable diseases—Four weeks ended November 18, 1928.—During the four weeks ended November 18, 1928, communicable diseases were reported in the Kingdom of Italy as follows:

Disease	Oct. 22-28		Oct. 29-Nov. 4		Nov. 5-11		Nov. 12-18	
	Cases	Communes affected	Cases	Communes affected	Cases	Communes affected	Cases	Communes affected
Anthrax	53	41	52	35	44	38	18	17
Cerebrospinal meningitis	9	8	3	3	6	5	5	5
Chicken pox	94	44	127	53	191	70	194	85
Diphtheria	475	256	508	278	472	248	491	261
Dysentery	17	17	14	9	12	11	3	3
Lethargic encephalitis			3	3	2	2	3	3
Measles	939	171	1,056	179	1,088	199	1,329	210
Poliomyelitis	26	18	12	11	19	16	26	23
Rabies			1	1			1	1
Scarlet fever	381	160	449	109	398	158	452	178
Smallpox			1	1				
Typhoid fever	1,071	458	926	426	832	384	796	378

PHILIPPINE ISLANDS

Meningitis.—During the week ended May 6, 1929, one case of epidemic meningitis was reported in Manila, Philippine Islands.

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER

From medical officers of the Public Health Service, American consuls, health section of the League of Nations, and other sources. The reports contained in the following table must not be considered as complete or final as regards either the list of countries included or the figures for the particular countries for which reports are given.

CHOLERA

[C indicates cases; D, deaths; P, present]

Place		Oct. 21–Nov. 17, 1928	Nov. 18–Dec. 15, 1928	Dec. 16, 1928–Jan. 12, 1929	Week ended— January, 1929		February, 1929				March, 1929					April, 1929		
					19	26	2	9	16	23	2	9	16	23	30	6	13	20
Ceylon	C			7							2	2						
	D			4							2	2						
Colombo	C			3	1	1												
	D			1														
Ingiriya Province	C	1																
	D	1																
China: Canton	C	2		3									1	1	1		1	
	D			1													1	
India	C	20,937	23,528	17,038	4,173	3,739	3,032	2,622	2,193	1,881	1,766							
	D	12,490	14,950	10,507	2,358	2,233	1,758	1,563	1,280	1,092	1,007							
Bassein	D		1		1	4	1		2	1	1	2	1	3	12	29	26	
Bombay	C	1	4		1								1		4			
	D	1	4									1			1	1		
Calcutta	C	219	247	103	23	43	34	29	43	56	72	90	108	155				
	D	140	155	61	13	30	19	23	30	31	40	43	56	83	79	89	96	
Madras	C	203	102	16	1		1	2	2	3	1	3						
	D	115	42	17		1	4		1		3							
Madras Presidency	C		1															
	D		1															
Moulmein	D		1									1	4	1	1	1		
Negapatam	C		1	6	8	9		1	1	1	1							
	D		1															
Rangoon	C		5	6	4	4	1	6	1	4	5	3	3					
	D		3	5	1	3	1	4		1	4	1	2	6	28	1	4	
Tuticorin	C		2	115	31	31	7	16	5	1								
	D	1		61	15	21	5	11	2	2								

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

CHOLERA—Continued

[C indicates cases; D, deaths; P, present]

Place		Oct. 21–Nov. 17, 1928	Nov. 18–Dec. 15, 1928	Dec. 16, 1928–Jan. 12, 1929	Week ended— January, 1929		February, 1929				March, 1929					April, 1929		
					19	26	2	9	16	23	2	9	16	23	30	6	13	20
India (French):																		
Chandernagor	C	43	25	4									1	1	1		1	
	D	34	10	4									1	1	1		1	
Karikal	C	111	7	54	40	61	31	18	28	10	28	22	14	6			3	
	D	85	4	41	34	46	31	17	21	8	21	21	12	3			3	
Pondicherry Province	C	6	37	92	27	58	32	22	29	18	29	10	30	12	4			
	D	5	30	55	21	45	22	16	24	18	24	8	24	10	4			
Indo-China (see also table below):																		
Pnompenh	C	1	1	6	1			1	7	22	12	1		2	3	1	3	8
	D	1	1	1				1	5	20	10	1		1	3	1	1	5
Saigon	C	1		6	3	1	2						2	5	5		3	3
	D			4	1	1	1							1		1	2	1
Kwangchow-Wan (see table below).																		
Siam	C	47	104	224	59	72	29	35	39	43	41	42	50	74	117	156	175	85
	D	27	68	150	50	38	23	27	26	32	22	37	33	59	73	104	119	61
Anthoang	C			4	1				3									
	D			1	1				2									
Ayudhaya	C	15	2	16	1		2	1			4				1		2	1
	D	12	2	14	1		2	1			4				1			
Bangkok	C	5	18	22	11	14	12	17	17	19	12	13	10	14	3	11	15	16
	D	3	12	6	18	8	8	9	12	7	5	12	7	9	1	4	10	13
Chaxoengsao	C				1		3	5		1								
	D				1		3	5		1								
Dhannapuri	C		6	16	2			1	1	1	1						2	
	D		5	10	2					1							1	
Lobpuri	C			74					2			1					1	
	D			61					1								1	
Nagara Pathom	C											2						
	D											2						
Nondpuri	C		1	4														
	D		1	2														
Pradhumdham	C							1										
	D							1										
Singhapuri	C			17	2		3	1	1									
	D			12	2		4	1	1									
Smud Prakar	C		37	30	6		2	2	1									
	D		28	16	5		2	1										

Smud Sagara	C	27	34																
	D	12	16																
On vessel:																			
S. S. Ekma at Penang from Singapore	C												P						
S. S. Tilawa at Penang from Singapore	C													P					
S. S. Elephanta at Penang from Calcutta	C														P				

Place		October, 1928	November, 1928	December, 1928	January, 1929			February, 1929			March, 1929		
					1-10	11-20	21-31	1-10	11-20	21-28	1-10	11-20	21-31
Indo-China (French) (see also table above):													
Annam	C	11	5									3	3
Cambodia	C	25	21	25	26	25	28	29	40			26	3
Cochin-China	C	52	156	607	232	202	226	107	115			13	170
Kwangchow-Wan	C		1										

PLAGUE

Place		Oct. 21–Nov. 17, 1928	Nov. 18–Dec. 15, 1928	Dec. 16, 1928–Jan. 12, 1929	Week ended—														
					January, 1929			February, 1929			March, 1929					April, 1929				
					19	26	2	9	16	23	2	9	16	23	30	6	13	20	27
Algeria:																			
Algiers	C	2																	
Oran	C	2																	
Argentina: [1]																			
Buenos Aires [2]—																			
Catamarca Province—Recreo	C	P	9																
Cordoba Province—																			
Canada Honda	C	14																	
Laborde	C			1															
Jujuy Province—Perico	C			1				3											
Rosario	C			2				1						[3] 20					
Santiago del Estero	C	7																	
Tucuman Province—El Mollar	C		5																

[1] During the period from Nov. 10 to Dec. 11, 1928, 13 cases of plague were reported at El Mollar, Tucuman Province, Argentina. During the same period 1 case of plague was reported at Chipion and 1 at Ucacha, both in Cordoba Province, Argentina.
[2] 18 plague-infected rats were reported at Buenos Aires, Argentina, from July 1 to Dec. 31, 1928.
[3] Unofficial report.

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

PLAGUE—Continued

[C indicates cases; D, deaths; P, present]

Place		Oct. 21–Nov. 17, 1928	Nov. 18–Dec. 15, 1928	Dec. 16, 1928–Jan. 12, 1929	Week ended— January, 1929			February, 1929			March, 1929					April, 1929			
					19	26	2	9	16	23	2	9	16	23	30	6	13	20	27
Azores: St. Michaels Island	C	3		2	1									1					
	D	1																	
Belgian Congo:																			
Djugu	C	2						1	3			1							
	D							1				1							
Lenza	C	1	1	1															
Brazil:																			
Para	C					1													
Santos	C		2																
British East Africa (see also table below):																			
Uganda	C	114	124	155	39	37	30	46	36	27	22	27							
	D	103	121	152	38	37	30	44	35	27	20	26							
Canary Islands: Teneriffe	C		1																
Laguna	C							1											
Ceylon:																			
Colombo	C	1	4	8		1	2	3	2			2		2	2		2	2	
	D	1	4	8		2	1	2	2			1					1	2	
Plague-infected rats			5					2	2				2				1		
Jaffna	C	1																	
China:																			
Hainan	C							P		1	P								
Mongolia—Tungliao	C	19																	
Suyuan Province	C							P		1	P								
Dutch East Indies:																			
Celebes—Makassar	D			1															
Plague-infected rats		2						1											
Java—																			
Batavia and West Java	C	23	43	54	13	12	22	27	16	16	24	14	21				1		
	D	22	42	53	13	12	22	26	16	16	23	14	21						
Plague-infected rats			1								2	2		2			5		
Surabaya	C	2	1		1	1	3	1											
	D	2			1	1	3	1											
Kediri Residency	C					P													
Ecuador (see table below).																			
Egypt:																			
Alexandria	C					2	1												
	D					1													

Assiout Province	D	3																	
Beni-Suef	C		4	9	1	2						4	2				1	5	
	D		1	2		3						1	1	1				1	
Dierout	D	1																	
Girga	C		1																
Kena Province	C		4																
Menoufieh Province	C	7																	
Port Said	C																		1
Suez	C										1			1	1				
Tanta	C	5																	
Greece (see also table below):																			
Athens and Piræus	C	5																	
Corfu	C		1																
India	C	8,710	7,767	7,841	2,592	3,117	3,224	3,667	3,767	4,030	4,970								
	D	4,428	4,863	5,234	1,834	2,166	2,227	2,588	2,896	2,867	3,528								
Bassein	D	2		1	1		3		2	1		1	2	2	1		2		
Bombay	C	5	4		1			1		2	2	1	1	1					
	D	2	6		1	1	2		1	1	1	1	3				3	1	
Plague-infected rats		7	32	35	11	10	11	6		8	12	18	9	17	18	13	18	20	
Cochin	D			10															
Madras Presidency	C	539	686	500	120	107	130	77	103	90	87	53							
	D	235	307	231	65	60	66	44	49	58	52	30							
Rangoon	C	2	1	1		1	2	1	1	1	2								
	D	3	1	2	1	1	2	1	1	1	2			3	3	3	6	4	
Plague-infected rats		4						5	1	4	3	3	2	2	6	5	3	1	
Indo-China (see also table below):																			
Pnompenh	C	1	4	8	2	4	1	3	2		1	2	3	2	4	1		3	
	D	1	4	6	2	4	1	2	1		1	1	3	2	4	1		3	
Saigon	C	1								1									
Tourane	C								5										
Iraq:																			
Baghdad	C	9	10	9	2	1	3			1	6	3	4	5	2		1	1	2
	D	5	5	8		1	2				3			2	1		1	1	2
Plague-infected rats							1	5	6	6	5	5	3	2	2	7	2		
Naudham	C					2													
	D					1													
Plague-infected rats								1											
Madagascar (see also table below): Tamatave	C	7		2	1														
	D	3	1																
Morocco	C													22	59	25			
	D													14	43	16			
Nigeria:																			
Lagos	C	83	43	12	1	4	2	7	2	4	5		1	1	1			1	
	D	77	41	11	1	3	1	7	2	4	5		1	1	1	1		1	
Plague-infected rats		145	30	28		14	12	22	10	16	15	9							
Peru (see table below).																			
Senegal (see table below).																			
Siam	C	1	9	4	2	11	6	26	3	4	1	1							
	D	1	8	3	2	6	6	3	2	5	1	1							
Bangkok	C	1		4	1					1									
	D	1		1	1		1			1									

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

PLAGUE—Continued

[C indicates cases; D, deaths; P, present]

Place		Oct. 21–Nov. 17, 1928	Nov. 18–Dec. 15, 1928	Dec. 16, 1928–Jan. 12, 1929	Week ended— January, 1929			February, 1929			March, 1929					April, 1929			
					19	26	2	9	16	23	2	9	16	23	30	6	13	20	27
Siam—Continued.																			
Nagara Pathom	C									2	1				4				
	D									1	1				4				
Panknampo	C		8																
Straits Settlements: Singapore	C									1									1
	D									1									1
Syria (see table below).																			
Turkey: Adalia	C	1																	
Union of Socialist Soviet Republics:																			
Kalmouks District	C	10																	
Kazacks	C	7																	
Ural Government	C	7																	
Union of South Africa:																			
Cape Province	C	2	1	4															
Orange Free State	C	P		1	1		2	3	1	1			P						
	D							1											
Transvaal	C			3										5					
	D													5					
Uruguay:																			
Montevideo	C														4				
Rivera	C			1															
On vessel:																			
S. S. Chenonceaux, at Singapore, from Colombo	C													1					
	D													1					
S. S. Halydan, at Bangkok, from Singapore	C			1															
S. S. Sjomand, at Alexandria, from Batoum	C					1													

Place		October, 1928	November, 1928	December, 1928	January, 1929	February, 1929	March, 1929
British East Africa (see also table above):							
Kenya	C	37	16	15	7	4	
Uganda	C	134					121
	D	108					113
Ecuador: Guayaquil	C	3	21	20	25	54	26
	D	2	8	7	12	22	4
Plague-infected rats		21	29	75	29	27	14
Greece (see also table above)	C		1	2	3		
	D		1	1	1		
Indo-China (see also table above)	C	2			11		3
Madagascar (see also table above)	C	88		282	233		
	D	84		263	224		
Ambositra Province	C	8	14	79	169		
	D	8	14	74	159		
Antisirabe Province	C	2	6	4	15		
	D	2	6	4	15		
Itasy Province	C	5	6	11	3		
	D	5	6	11	3		
Moramanga Province	C	38	32	28	22		
	D	35	32	27	21		
Tamatave	C	9	2	2	4		
	D	7	2	2	4		
Madagascar—Continued.							
Tananarive Province	C	100	159	158	208		
	D	95	141	144	192		
Peru	C	10	18	26	37		
	D	4	6	6	9		
Senegal:							
Baol [1]	C	39	18	4			6
	D	14	6	2			3
Cayor [1]	C	17		14			
	D	6		10			
Fatick [1]	C	35					
	D	20					
Louga [1]	C	14	2				
	D	5	1				
Rufisque [1]	C	49	8				
	D	14	4				
Thies [1]	C	51	11			8	4
	D	29				7	3
Tivaouane [1]	C					12	
	D					2	
Syria: Beirut	C	1	3				

SMALLPOX

Place		Oct. 21–Nov. 17, 1928	Nov. 18–Dec. 15, 1928	Dec. 16, 1928–Jan. 12, 1929	Week ended— January, 1929		February, 1929				March, 1929					April, 1929			
					19	26	2	9	16	23	2	9	16	23	30	6	13	20	27
Algeria:																			
Algiers	C	2	1													3			
Cherchell	C									4	11	6	11	19	12		1		
Oran	C		7								1			1			1		
Arabia: Aden	C	1	1	1	1	1							1	11	9	9	28	17	
	D													1	4	3	6	4	

[1] Reports incomplete.

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

SMALLPOX—Continued

[C indicates cases; D, deaths; P, present]

Place		Oct. 21–Nov. 17, 1928	Nov. 18–Dec. 15, 1928	Dec. 16, 1928–Jan. 12, 1929	Week ended— January, 1929		February, 1929				March, 1929					April, 1929			
					19	26	2	9	16	23	2	9	16	23	30	6	13	20	27
Brazil (see table below).																			
British East Africa (see also table below), Kenya—																			
Mombasa	C			3															
British South Africa:																			
Northern Rhodesia	C	342	67	173															
	D	14	8	23															
Southern Rhodesia	C	1	5					1	1	16				68					
Tanganyika	C	1					1	12	1		1	1							
Canada:																			
Alberta	C	4	21	3	3					2	1	1			7		5		
Calgary	C											1							
Edmonton	C			14	2					2			2			10		4	
British Columbia—Vancouver	C	21	25	51	24	16	16	10	17	14	21	18	22	17	18		12	19	
Manitoba	C	14	29	23	3		12	6	2	5	3	5			3				
Winnipeg and vicinity	C		17	2															
New Brunswick	C														3				
Nova Scotia	C			5	1		1										1		
Ontario	C	12	15	36	7	4	25	47	38	23	15	7	12	21	14	10	15	37	
Kingston	C	1																	
Niagara Falls	C													1					
North Bay	C		1						1	2		1							2
Ottawa	C	6	2							1									
Sarnia	C	1																	
Toronto	C						1							1		1	1		
Windsor	C																		3
Prince Edward Island	C						2					2							
Quebec	C	118	125	37	9	5	5	5	6	14	3	5	4	3	2	5	11	8	12
Montreal	C	10	3	8	5	2	2	1	3	10	2	1	3		1				
Quebec	C	12	6	4	4	2		2						1		2	1		
Riviere du Loup	C																1		
Saskatchewan	C	10	52	14	3	2	13	17	13	22	31	4		13				9	
Moose Jaw	C	2	1											1					
Regina	C		2	1	2	4													
Saskatoon	C						3	1						1					

China:																				
Amoy	C	P	2	5				P	1	1	1	2	1	1	1					
Canton	C		14	18	14	21	36	16	17	25	15	29	22	42	38	33	29	21		
	D			2	1			1	3	1	2	9	3	4	4	4	2	3		
Chefoo	C	P	P																	
Foochow	C	P	P	P	P	P	P	P	P	P	P	P	P	P						
Hong Kong	C	66	202	319	91	78	58	80	47	54	51	37	26	31	22	13	21	16	11	
	D	21	78	152	83	77	67	59	61	59	34	42	51	47	29	10	30	36	15	
Manchuria—																				
Changshun	C						3			2							1			
Fushun	C	1			1		1	3												
Harbin	C	7	4	2	5															
Kwantung—Dairen	C	2	5				1	1	1	4	3	1				1	6	2		
	D						1	1	1		2						3			
Mukden	C			1				3								1				
	D							1												
Shanghai—																				
Foreigners only	C	9	6	23	8	3	4	8	3	4	1	3	1	1	1					
Including natives	D	20	32	64	15	18	18	9	9	9	10	12	3	8	5	9	7			
Swatow	C										5	4	12	7	6	8	22			
Tientsin	C	6	2	6		2		1		1		1	2		2					
Tsingtao	C								P	P	P		P		P	P				
Yunnanfu	C												P	P						
Colombia: Cartagena	D		7							7										
Dominican Republic	C							1												
Dutch East Indies:																				
Balikpapan	C									1			1	4						
Belawan Deli	C	5	6	7	5	11	2	8	4	3	1	1	2	2	2	1	1			
	D	2	2	3	1	4		1	3	2	1			1	1					
Borneo	C				30					13		13								
Pontianak	C	1																		
Samarinda	C	16	27	11				4		17	3	27	1			1		1		
	D	2	4	3						3	1			3						
Celebes—Makassar	C		1												4	2	6	9		
	D															2	5	4		
Java—																				
Batavia and West Java	C	2	1																	
East Java and Madura	C	1																		
	D	1																		
Surabaya	C	1	2																	
Palembang	C								1		8									
	D								1		1									
Sumatra—																				
Baros	C			96	50	14	25	17	3	19	13	1		9						
	D			30	12	7	5	2	1	3	1									
Medan	C	4	3	9		1	2	8	4	3	1	1	2	2						
	D	2	1	5		4		1	3	2	1		1	1						
Ecuador (see table below).																				
Egypt:																				
Gharbieh	C								1											
Port Said	C							1												
Suez	C		1															1	4	

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

SMALLPOX—Continued

[C indicates cases; D, deaths; P, present]

Place		Oct. 21–Nov. 17, 1928	Nov. 18–Dec. 15, 1928	Dec. 16, 1928–Jan. 12, 1929	Week ended— January, 1929		February, 1929				March, 1929					April, 1929			
					19	26	2	9	16	23	2	9	16	23	30	6	13	20	27
France (see table below).																			
Great Britain:																			
England and Wales	C	581	719	733	171	239	230	250	231	275	288	289	272	288	323	273	339	-----	-----
	D	-----	1	-----	-----	-----	-----	1	-----	1	-----	1	-----	3	-----	-----	-----	1	-----
Bradford	C	-----	-----	-----	1	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	1	1	-----	-----
	D	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Bristol	C	-----	1	-----	-----	-----	4	-----	-----	-----	-----	-----	-----	-----	-----	9	5	-----	-----
	D	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Cardiff	C	6	8	16	4	14	16	14	22	31	12	20	13	17	17	-----	-----	-----	-----
	D	-----	-----	-----	-----	-----	2	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Castleford	C	3	1	-----	-----	-----	1	1	1	1	3	1	1	3	3	1	1	1	-----
	D	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	1	-----	-----	-----
Hull	C	1	2	1	-----	1	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
	D	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Leeds	C	-----	-----	-----	1	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
	D	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Liverpool	C	21	14	36	6	13	17	4	9	17	10	18	11	13	19	15	29	-----	-----
	D	-----	-----	-----	-----	-----	1	5	2	-----	3	1	2	-----	-----	14	1	-----	-----
London	C	1	3	-----	-----	-----	-----	1	-----	-----	-----	-----	2	-----	-----	-----	-----	-----	-----
	D	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Newcastle-on-Tyne	C	1	3	3	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
	D	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Nottingham	C	6	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
	D	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Plymouth	C	9	11	4	2	8	2	2	5	4	4	5	4	28	20	20	42	-----	-----
	D	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	1	-----
Stoke-on-Trent	C	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
	D	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Scotland—																			
Aberdeen	C	2	1	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	1	12	6	-----
	D	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Dundee	C	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
	D	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Glasgow	C	-----	-----	48	55	21	22	55	29	42	37	-----	-----	24	30	30	23	-----	-----
	D	-----	-----	15	20	7	9	20	13	15	12	-----	-----	10	21	21	16	-----	-----
Greece (see table below).																			
Hedjaz	C	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
	D	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
India	C	3,041	5,902	7,877	2,887	3,285	3,248	3,111	3,528	3,520	3,937	-----	-----	-----	-----	-----	-----	-----	-----
	D	836	1,602	2,143	729	798	815	703	860	788	847	-----	-----	-----	-----	-----	-----	-----	-----
Bombay	C	9	11	34	34	42	44	38	44	93	112	148	142	119	94	86	104	57	-----
	D	4	4	21	13	17	25	23	32	37	49	70	58	52	51	45	46	30	-----
Calcutta	C	2	13	10	8	4	7	7	13	9	11	71	35	32	22	28	34	24	-----
	D	2	7	6	5	1	3	7	6	7	7	9	24	21	13	19	26	16	-----
Karachi	C	-----	-----	6	-----	10	1	16	28	24	49	46	43	57	58	48	29	57	-----
	D	-----	-----	6	-----	1	-----	4	7	4	11	22	14	13	20	33	8	22	-----
Madras	C	71	58	94	50	82	37	54	60	56	68	76	88	96	104	104	107	87	-----
	D	22	16	25	6	11	12	6	13	6	18	24	11	23	23	26	20	26	-----
Moulmein	C	-----	5	3	2	2	2	-----	4	-----	5	5	5	3	5	5	-----	1	-----
	D	-----	1	1	-----	1	1	-----	-----	-----	-----	4	2	-----	1	1	-----	1	-----

Negapatam	C	39	33	8	3	14	2	7	2	2		1	4	3		2	1		
	D	8	5			1		5	2	1		1				1			
Rangoon	C	1	1	1		4	1	3	4	6	2	5	3	2	4	3	2		
	D						1		1	1	2	2	1	2		1			
Tuticorin	C				1		1			1									
Vizagapatam	C			2	2			6	12	4	17	19	8	3	15		9	4	
	D								2		3	4	1	2	2		1	4	
India (French):																			
Chandernagor	C	3																	
	D	3																	
Pondicherry Province	C	84	48	75	22	13	12	12	18	26	16	19	6	21	23	20		2	
	D	67	46	62	20	13	10	8	14	22	12	13	6	17	18	19		2	
Indo-China (see also table below):																			
Pnompenh	C	30	44	38	11	6	38	22	19	15	18	10	13	19	27	9	9	19	
	D	5	20	21	8	3	17	14	10	8	11	7	5	10	14	4	5	13	
Saigon	C	2		12	2		1	2		1	1		1		1	1	1		
	D	2		6			1												
Iraq:																			
Baghdad	C	40	46	20	13	1	1	2	4	2	1		2	3		1	16	1	1
	D	23	45	29	2	1			4	1				1					
Basra	C	35	35	11	5	4	1	8	4	2		1	2	1	1	5	2	1	
	D	33	20	7	4	3	1	2	3	1		1			1	1		1	
Hillah Liwa	C			54	20														
	D			14	9														
Kirkuk Liwa	C		173	86					9	9									
	D		38	17					2	2									
Mossoul	C	53	294	55	2		23	5	14	14									
	D	23	110	39	4		12	1	2	2									
Sinjar	C			53	61														
	D			5	15														
Italy:																			
Palermo	C	2	3	3															
Rome and vicinity	C			1			2												
Turin	C								1										
Ivory Coast (see table below).																			
Jamaica (outside Kingston) (alastrim)	C			1															
Kingston (alastrim)	C		1																
Japan:																			
Kobe	C										1								
Nagasaki	C				1	1	1												
	D					1	1												
Osaka	C										1								
Shimane Province	C														16				
Macao	D			9	2	8		14	24	24	12	15	6	3	14	9	9	6	
Mexico:																			
Aguascalientes	D		2	1	1	1	1			3				2		5	1	6	
Chiapas Province	C														P				
Chihuahua	D				1														
Jalisco (State): Guadalajara	D		4	1		2	2	4	4	2	1	1		2	4	7	3	1	
Juarez	D			5		1					1		3						
Mexico City and surrounding territory	C	5		7	2					2			1						
Oaxaca State—Zacatepec	C																	P	

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

SMALLPOX—Continued

[C indicates cases; D, deaths; P, present]

Place		Oct. 21–Nov. 17, 1928	Nov. 18–Dec. 15, 1928	Dec. 16, 1928–Jan. 12, 1929	Week ended— January, 1929		February, 1929				March, 1929					April, 1929			
					19	26	2	9	16	23	2	9	16	23	30	6	13	20	27
Mexico—Continued.																			
Palomas	C										1								
Saltillo	D	1																	
San Luis Potosi	D	1																	
Tampico	C	1								1				2					
Vera Cruz	D													2					
Morocco (see table below).																	P		
Nicaragua: Managua	C																		
Nigeria:																			
Lagos	C	1				57	105												
Southern Provinces	C					11	20										2		
	D														P				
Norway: Stavanger	C																		
Panama Canal Zone	C	1	3	1				41									2		
Poland	D	1						3											
Portugal (see also table below).																			
Lisbon	C			2	2		2						3		1		2		
Oporto	C																	1	
Senegal (see table below).																			
Siam	C	1	8	19				2		3	1								
	D			2															
Bangkok	C		1							1	1			4	1				
Spain: Valencia	C														1				
Straits Settlements: Singapore	C			1		2	1	2	2		1								
Sudan (Anglo-Egyptian)	C	79	220	491	190	17	58		49	71	13	55	30	22	37	156	127	138	12
	D	13	42	57	24	5	5		13	14	11	16	6	2	6	15	17	3	3
Sudan (French) (see table below).																			
Sweden: Stockholm	C		1																
Syria (see table below).											3	2						2	
Tunisia: Tunis	C	1	2	14															
Union of South Africa:																			
Cape Province	C	P	P																
Natal	C			1															
Orange Free State	C	P																	
Transvaal	C	P																	

Upper Volta	C	5				1		2	2		2				3	1			
On vessel:																			
S. S. Ballarat, en route to Cape Town, South Africa	C	1																	
S. S. Lopez-Lopez, at Suez	C																1		
S. S. Malwa, at Suez	C																	1	
S. S. Mancar, at Suez, from Calcutta	C																1		
Tantalus (motorship), at Amsterdam	C								3										
S. S. Tuscania, at Glasgow, from Bombay	C															P			

Place		October, 1928	November, 1928	December, 1928	January, 1929			February, 1929			March, 1929			April 1-10, 1929
					1-10	11-20	21-31	1-10	11-20	21-28	1-10	11-20	21-31	
Indo-China (see also table above)	C	100	144	243	74	130	107	128	236			200	361	
Ivory Coast	C	1											4	
Senegal	C	2						80			17	8	45	50
	D							8			1	3	7	15
Sudan (French)	C	32		2								26		10
	D	2										3		
Syria: Beirut	C	1	2	1		1		21	24	3		10	2	2

Place		October, 1928	November, 1928	December, 1928	January, 1929	February, 1929	March, 1929
Brazil: Porto Alegre	C	12	3				
British East Africa (see also table above):							
Kenya	C	36	37	31			23
Zanzibar	C	2					
Chosen: Chinampo	C					1	
Ecuador: Guayaquil	C	6	6	13	12	4	2
	D	3	1	1	1	1	
France	C	3		18	9	3	5

Place		October, 1928	November, 1928	December, 1928	January, 1929	February, 1929	March, 1929
Greece	C	6	6	6	8	5	2
	D	1			1	1	
Morocco	D	5	2		7	11	
Persia	D			119	68	23	8
Portugal (see also table above)	C	27					
	D	3					
Turkey	C				16	7	
	D				6		

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

TYPHUS FEVER

[C indicates cases; D, deaths; P, present]

Place		Oct. 21–Nov. 17, 1928	Nov. 18–Dec. 15, 1928	Dec. 16, 1928–Jan. 12, 1929	Week ended— January, 1929		February, 1929				March, 1929					April, 1929			
					19	26	2	9	16	23	2	9	16	23	30	6	13	20	27
Algeria:																			
Algiers	C	4											3	1		2	4		
Constantine Department	C							2	2			11	P	2					
Oran	C	2				5						2							
Bulgaria	C	4	9	5	3	4			3		19	17	7	18	10	5	5		
	D	1										2	1	3		1	1		
Sofia	C							1											
Chile: Valparaiso	C		1																
China:																			
Canton	C				2														
	D				2														
Hong Kong	C				1														
Manchuria—																			
Harbin	C		2																
Kwantung	C	1										1							
Chosen (see table below).																			
Egypt:																			
Alexandria	C												1						1
Assouan Province	C								2										
	D								2										
Beheira Province	C								6	7						67	50		
	D															9	9		
Daqahliya Province	C		15	11									34						
	D		1	2															
Gharbieh	C							1		2									
	D									1									
Menoufieh Province	C																	35	
Port Said	C	1																	
Greece (see table below).																			
Ireland: Irish Free State—																			
Clare County—Scariff	C	1																	
Cork County	C										1								
Dublin	C					1													
	D						1												

Kerry County—

Kerry County—																			
Dingle	C												2						1
Killarney	C											1					2		
Lithuania (see table below).																			
Mexico (see also table below):																			
Aguascalientes	D		2										3		2				
Chihuahua	D			1															
Mexico City, including municipalities in Federal District	C	15	12	9	3	4	1	3	1	3	1	2	1	1	2				
	D	2	1	2		1		2	1			1							
San Luis Potosi	D			1															
Morocco	C	1	16	4	1	7	7	5	6	10	1		7		6	6			
Palestine	C	6	12	2		2		1		2					2		1		
Peru (see table below).																			
Poland	C	81	117	203	33	76	72	41	47	51	91	55	69	80	67				
	D	10	11	16	5	3	4	3	6	6	5	3	7	5	2				
Portugal: Oporto	C		1																
Rumania	C	17	42	167	56	40	47	30	42	32	70	67	62						
	D		1	11	5	7	7	4	3	7	8	10	7						
Tunisia	C	4	6				2		3				9		9	2	7	2	
Menzel	C	1																	
Turkey (see table below).																			
Union of South Africa:																			
Cape Province	C	P	P	P		P	P	P	P	P	P	P	P	P					
Natal	C	P	P	2						2			P	P					
Orange Free State	C	P	P	P		P	P	P	P	P									
Transvaal	C			P		1													
Yugoslavia (see table below).																			

Place		October, 1928	November, 1928	December, 1928	January, 1929	February, 1929	March, 1929
Chosen:							
Chemulpo	C	1	1				
Seoul	C	3		3	4		
Greece: Athens	C	1	4	1	13		
	D				5		
Lithuania	C		4	11	32	24	62
	D				3	3	1
Mexico: Sonora (see also table above)	D					1	
Peru	C		3				
Turkey	C	4		19	1	3	11
	D					1	
Yugoslavia	C	1	17	7	15	13	7
	D					2	

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

YELLOW FEVER

[C indicates cases; D, deaths; P, present]

Place		Oct. 21–Nov. 17, 1928	Nov. 18–Dec. 15, 1928	Dec. 16, 1928–Jan. 12, 1929	Week ended— January, 1929		February, 1929				March, 1929					April, 1929			
					19	26	2	9	16	23	2	9	16	23	30	6	13	20	27
Belgian Congo: Tumba	C																		1
Brazil:																			
Bahia	C	1		2											1				
	D			1											1				
Guaratingueta	C										[3] 1								
	D										[3] 1								
Para	D			2		1										5			
Rio de Janeiro [1]	C	2	2	2			7	19	13	[4] 11	21	47		59	61	66	57	51	39
	D	1		2			4	13	9	6	18	27		30	38	32	34	23	20
Sao Paulo	C							[2] 1											
	D							[2] 1											
Dahomey: Ouidah Military Camp	C	1	1																
	D	1																	
Gambia: Bathurst	C	4	3																
	D	1	2																
Liberia: Monrovia	C					[3] 3													
	D					2													
On vessel:																			
S. S. Victoria, at Manaos, from Para, Brazil	C			1															
	D			1															

[1] 29 cases of yellow fever with 14 deaths were reported at Rio de Janeiro during January, 1929, mostly suburban.
[2] Imported.
[3] Suspected cases.